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ABSTRACT

The Communication Theory and Methodology section of the Proceedings contains the following 20 papers: "Information Sufficiency and Risk Communication" (Robert J. Griffin, Kurt Neuwirth, and Sharon Dunwoody); "The Therapeutic Application of Television: An Experimental Study" (Charles Kingsley); "A Path Model Examining the Influence of the Media on Fear of Crime and Protective Act" (Mahmoud A. M. Braima, Thomas Johnson, and Jayanthi Sothirajah); "Cognitive Innovativeness as a Predictor of Student Attitudes and Intent: An Application of the Theory of Planned Behavior to Online Learning Environments" (Tracy Irani and Michelle O'Malley); "Source Perception and Electrodermal Activity" (No-Kon Heo and S. Shyam Sundar); "The Crisis of Communication for Citizenship: Normative Critiques of News and Democratic Processes" (Erik P. Bucy and Paul D'Angelo); "The Hoopla Effect: Toward a Theory of Regular Patterns of Mass Media Coverage of Innovations" (Eric A. Abbott and April A. Eichmeier); "Predicting Online Service Adoption Likelihood among Nonsubscribers" (Carolyn A. Lin); "Evidence for Selective Perception in the Processing of Health Campaign Messages" (Ekaterina Ognianova and Esther Thorson); "Revisiting the Knowledge Gap Hypothesis: Education, Motivation, and Media Use" (Nojin Kwak); "Predicting Future Risky Behavior among Those 'Too Young' to Drink as the Result of Advertising Desirability" (Erica Weintraub Austin and Christopher Knaus); "Thoughtful Self-Critique or Journalistic Cannibalism? International Press Coverage of Princess Diana's Death" (Martin Eichholz); "The Third-Person Perception and Support for Restriction of Pornography: Some Methodological Problems" (Ven-hwei Lo and Anna R. Paddon); "A Virtual Fetish: Themes of a Virtual Community as Presented in 'Time' and 'Wired'" (Marjorie Lynne Yambor); "Mood Congruence and the Utility of Sad Media Content--An Exploration of 'Wallowing'" (Kimberly A. Neuendorf); "Identifying Structural Features of Radio: Orienting and Memory for Radio Messages" (Robert F. Potter, Annie Lang, and Paul Bolls); "Video Violence: Desensitization and Excitation Effects on Learning" (Bradford L. Yates and others); "Developing an

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Integrated Theory of Recall of News Stories" (Margaret H. De Fleur); "Viewer Elaboration about News Video" (Michael Murrie); and "Understanding Deliberation: The Effects of Discussion Networks on Participation in a Public Forum" (Jack M. McLeod and others). (RS)

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# PROCEEDINGS OF THE ANNUAL MEETING OF THE ASSOCIATION FOR EDUCATION IN JOURNALISM AND MASS COMMUNICATION (81st, Baltimore, MD, August 5-8, 1998).

## COMMUNICATION THEORY AND METHODOLOGY.

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# INFORMATION SUFFICIENCY AND RISK COMMUNICATION

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# INFORMATION SUFFICIENCY AND RISK COMMUNICATION

**Abstract**

Analysis of a survey of two Great Lakes cities develops and tests part of a model that focuses on characteristics of individuals that might predispose them to seek and process information about risks in different ways. Support is found for the model's propositions that information sufficiency (a person's sense of the amount of information needed to cope with a health risk) is based partially on affective response to the risk, which is based in part on perceptions of key characteristics of the risk. Support is less strong for the proposition that felt normative pressures to possess information may also affect information sufficiency.

**Acknowledgment**

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# INFORMATION SUFFICIENCY AND RISK COMMUNICATION

## INTRODUCTION

Most current risk communication research and most risk-related public information programs are concerned with message effects on audiences, assuming that the "right" message intervention can cause people to change risk-related behaviors. Yet a number of researchers counsel that, to develop a truly useful understanding of the role and effects of risk communication in the daily lives of audience members, researchers and practitioners must pay more attention to the communication and information-evaluative behaviors of audiences as seekers and users of information about risks. This audience-based perspective is supported by the growth of theories in psychology and communication concerned with the ways that people seek and process information of various kinds, what motivates such communication activities, and the effects of these processes on cognition, affect, and behavior.

The purpose of this research program is to develop and test a model, derived from Eagly and Chaiken's (1993) "Heuristic-Systematic" model, that focuses on characteristics of individuals that might predispose them to seek and process information about risks in ways involving more or less effort and critical thinking. Furthermore, it is expected that persons who analyze risk information more critically will develop cognitions, attitudes and behaviors in regard to the risk that are stable, more resistant to change. Since the goal of many health information campaigns is to convince people to make long-term changes in behavior, the information processing conditions leading to such stability are important considerations. The model, originally designed to describe information seeking and processing about health risks, is being tested initially by applying it to three hazards involving the Great Lakes. Two of the hazards indeed involve potential health risks to oneself: risks from consuming contaminated fish caught in the Great Lakes and risks from consuming drinking water drawn from the Great Lakes. The third hazard — risks to the health of the Great Lakes' ecosystem — represents a potential application of the model to information about risks affecting the environment.

The study has been funded by a four-year grant from the federal Agency for Toxic Substances and Disease Registry. That grant supports a three-year, three-wave panel design telephone sample survey in two communities (Milwaukee and Cleveland) located on the Great Lakes, concentrating primarily on communication about risks from eating Great Lakes fish. This paper reports a first-wave test of part of the model. A general overview of the model will be presented, but more attention will be paid to those variables active in this analysis.

## BACKGROUND

Most scholars who study risk communication view information use as a way-station on the road to understanding individuals' reactions to risks in their environment. That is, research typically employs some operationalization of exposure/attention to risk information as an independent variable, as a potential predictor of what individuals know about a risk, how they feel about it, or what they may do about it.

But inherent in all these studies is the assumption that information "does" something to individuals. If one can illuminate that causal process, goes the argument, one can then design message interventions that will cause people to buckle their seatbelts, recycle, or adopt low-fat diets. This top-down approach, no matter how well-intentioned, runs counter to suggestions by many risk perception researchers that risk communication be used to facilitate a bottom-up process (see, for example, Krimsky & Plough, 1988; National Research Council, 1989; Juanillo & Scherer, 1995). That is, information providers are counseled to provide individuals with the types of information they need rather than giving them only what others with expertise feel they should have. The bottom-up approach assumes the individual is a reasonable soul who, when it makes sense to do so, can become engaged intellectually in the risk issue at hand.

Consistent with this bottom-up scenario, we argue, is the reconfiguration of information-seeking as a dependent rather than an independent variable. Instead of asking how messages may influence people, the bottom-up approach calls for a focus on understanding the evaluative behaviors of the information user. Thus, we are studying factors that may influence the ways in which people seek and process risk information.

Why care specifically about the nature of information seeking and processing as dependent variables? We offer two responses to this question:

First, studies of everyday reasoning strategies suggest that such strategies can be marred by incompleteness and bias. Perkins et al. (1991), for example, find that, although individuals engage in what the researchers call "situation modeling" to solve a real-world problem, the resulting models constructed frequently invoke only a few common-sense, causal or intentional principles and only rarely entertain competing arguments. Other scholars (see, for example, Nisbett et al., 1983, and Griffin & Tversky, 1992) similarly encounter both flawed reasoning strategies and an enduring tendency to make decisions on the basis of truncated amounts of information. Given the complicated nature of risk — and particularly of those social constructions that we call risk estimates — it makes sense to seek the conditions under which individuals are more or less systematic in their search for risk information and in their processing of it.

Second, we feel it is useful to focus on the nature of information seeking and processing as a primary dependent variable because a body of theory has grown in both psychology and communication studies to facilitate the use of these concepts, most specifically Petty and Cacioppo's (1981) elaboration likelihood model (ELM) and, more recently, Eagly and Chaiken's (1993) heuristic-systematic model (HSM). Although these models have their roots in persuasion contexts of communication, Chaiken, Liberman and Eagly (1989) invite researchers to apply a generic version of HSM to a variety of other contexts in which people "are exposed to information about themselves, other persons, and events, and have to make decisions or formulate judgments about these entities" (p. 239).

Both ELM and HSM describe dual forms of human processing of information, one more superficial (and which people tend to use unless motivated otherwise) and the other deeper and more effortful. Generally, attitudes developed through the more intense forms of processing are more stable and longer lasting than those developed through superficial processing. In HSM terms, people tend to adopt the form of processing that they use for a given message based on **(1)** their *capacity* to process the information in each manner, and **(2)** their *motivation* to go beyond the more superficial ("heuristic") processing to engage in "systematic" processing, which can occur along with heuristic processing (Eagly & Chaiken, 1993).

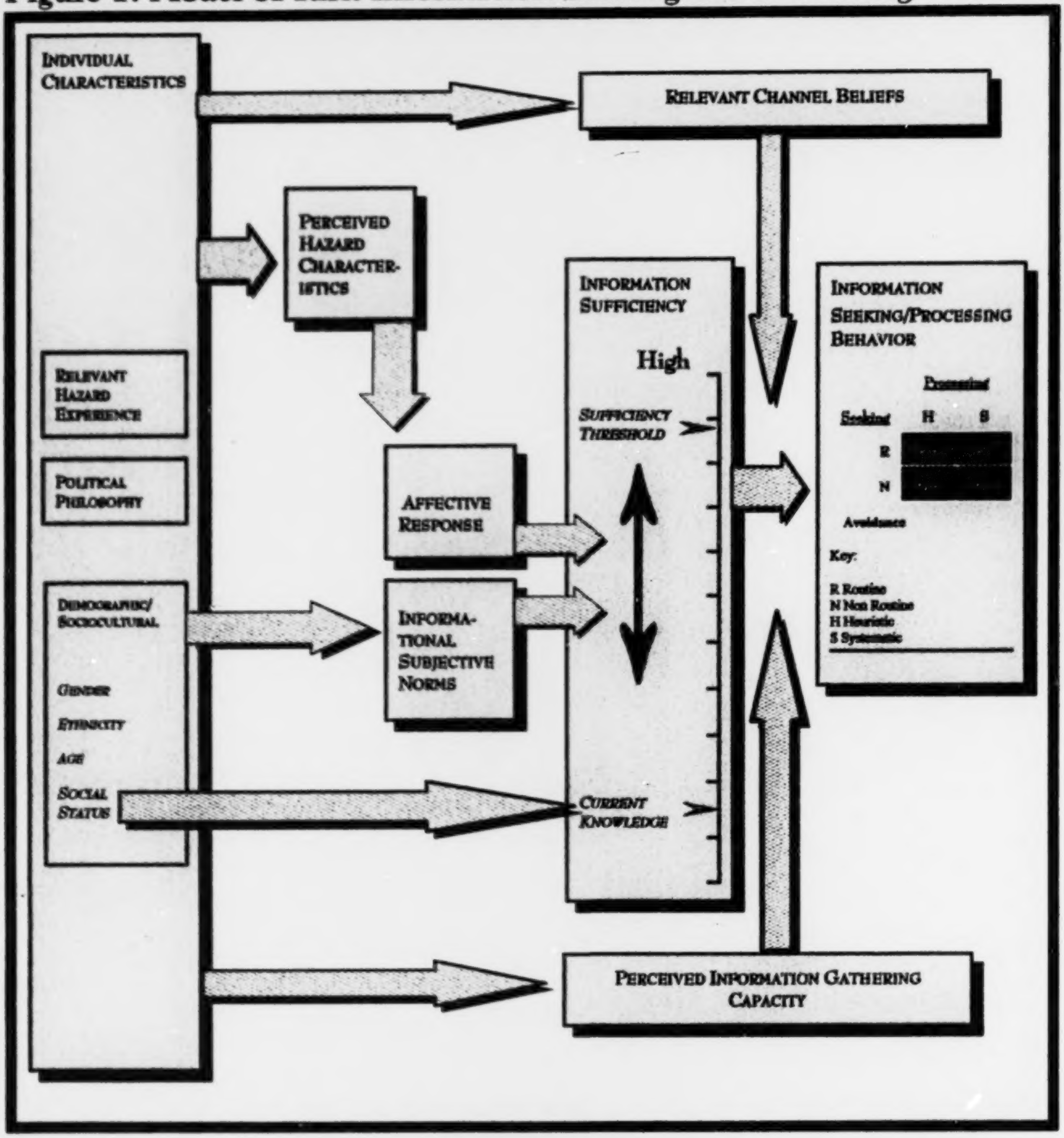
According to the HSM formulation, a person's desire for sufficiency motivates systematic processing. The sufficiency principle, state Eagly and Chaiken (1993), "asserts that people will exert whatever effort is required to attain a 'sufficient' degree of confidence that they have accomplished their processing goals" (p. 330). For example, the personal relevance of the message topic to the individual can motivate people to do systematic processing of the message (Eagly & Chaiken, 1993). Relevance elevates the amount of judgmental confidence people need to have (the "sufficiency threshold") in their own attitudes (*e.g.*, do they square with relevant facts? are they defensible? are they socially acceptable?) and/or the confidence they need to have in the validity of the message (Eagly & Chaiken, 1993). In a risk communication experiment, Griffin, Neuwirth & Dunwoody (1995) found that subjects who were given information that described a hazard as high risk and severe in its effects were less likely than other subjects to have their judgments of personal risk from the hazard affected by stylistic factors in the message. One interpretation is that relevance might have motivated subjects in the "risky and severe" condition to process the risk information more systematically and to rely less on heuristics that might have been influenced by superficial cues in the structure and style of the message.

By proposing that people need varying levels of confidence in the information (relevant facts) that they hold about a topic — especially as the basis for developing their beliefs, attitudes, and behavioral intentions toward their own preventive health behaviors (see Griffin, Neuwirth & Dunwoody, 1995; Ajzen & Timko, 1986) — we incorporate, extend and adapt some of the basic principles of HSM in part of our model of risk information seeking and processing. As part of our adaptation, we will concentrate some of our efforts on investigating a variable we will call "information sufficiency" (rather than the term judgmental confidence as used by Eagly and Chaiken), reflecting the nature of the variable concerned.

## OUR STUDY EXPECTATIONS

**Figure 1** illustrates the variables of primary concern in our *Model of Risk Information Seeking and Processing*, and indicates the strongest paths that we expect to find among these variables. Specifically, we hypothesize that three factors — (1) information sufficiency, (2) perceived information gathering capacity, and (3) relevant channel beliefs — will influence the extent to which a person will seek out risk information in both routine and non-routine channels and the extent to which he or she will spend time and effort analyzing the risk information critically (*i.e.*, systematically rather than merely heuristically). Consistent with past research (*e.g.*, Gantz, Fitzmaurice & Fink, 1991; Johnson & Meischke, 1993; Perse & Courtright, 1993; Perse, 1990a, 1990b, 1990c; Griffin, Dunwoody, Zabala & Kamerick, 1994), our model adds to the heuristic-systematic distinction the dimension of multi-channel information seeking and proposes that the sufficiency principle can also motivate non-routine seeking of information — that is, active attempts to gather relevant risk information (*e.g.*, calling the doctor) that go beyond

Figure 1: Model of Risk Information Seeking and Processing


Individual Characteristics
Relevant Hazard Experience
Political Philosophy
Demographic/ Sociocultural
Gender
Ethnicity
Age
Social Status
Relevant Channel Beliefs
Perceived Hazard Characteristics
Affective Response
Informational Subjective Norms
Information Sufficiency
High
Sufficiency Threshold
Current Knowledge
Information Seeking/Processing Behavior
Processing
Seeking
H
S
R
N
Avoidance
Key:
R Routine
N Non Routine
H Heuristic
S Systematic
Perceived Information Gathering Capacity

habitual or routine sources a given individual might usually use for such information (*e.g.*, evening newscast). Similarly, people might devote more or less effort to avoiding risk content if, for example, it produces worries with which they cannot cope. Some may simply not pay attention, while others might go out of their way to avoid such information.

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Based on Eagly and Chaiken's (1993) *motivational* factor, we argue that the size of the gap between information held and that needed will ultimately affect the information-seeking and processing styles that might be employed by the individual to learn more about the risk. To incorporate underlying notions of confidence and relevance, we will measure "information sufficiency" mainly in terms of the amount of information people say they need in order to deal adequately with a given risk in their own lives. Similarly, based on Eagly and Chaiken's (1993) *capacity* factor, we expect that the relationship between information sufficiency and information processing effort will be mediated by an individual's assessment of his or her ability to learn more about the risk ("perceived information gathering capacity"). To this mix we add "relevant channel beliefs," the individual's everyday beliefs about channels of risk information (*e.g.*, beliefs that the news media are biased), adapting work on media images by Kosicki and McLeod (1990). We would expect these beliefs to affect information seeking and processing in combination with self-perceived capacity and motivation. Based on Eagly and Chaiken (1993), we expect that persons who analyze risk information more critically will ultimately develop attitudes and even behaviors in regard to the risk that are more resistant to change. [Relevant behavioral measures, operationalizing Ajzen's (1988) Theory of Planned Behavior, are included in the second and third waves of the survey so assessment can be made of stability or change in those variables over time.]

The model proposes that information sufficiency, perceived information gathering capacity, and relevant channel beliefs, in turn, are affected to one extent or another by (1) affective response to the risk (*e.g.*, worry, anger), (2) subjective norms about knowledge and information-gathering about the risk, (3) perceived hazard characteristics, and (4) selected characteristics of the individual. For example, an affective response to the risk, such as worry, could influence one's judgment of the amount of information one feels one needs to have in order to cope with the risk (*e.g.*, to take effective action). Similarly, the one's perception that valued others expect one to keep on top of information about the risk (the subjective normative component) could also affect one's judgment about how much information one needs to have about the risk. Either or both variables could affect information sufficiency.

Various attributes of an individual (*e.g.*, social status, past experience with a hazard) are expected to affect his or her views of the characteristics of a given risk (*e.g.*, level of personal risk, the extent to which risk management institutions are acting in a trustworthy way, the extent to which one can protect oneself from the hazard, the extent to which a risk threatens a personally-held value) which in turn should influence his or her affective response (*e.g.*, level of personal worry or anger about that risk). Concurrently, many of those same individual attributes are expected to influence the individual's assessment of the amount of information he or she already possesses about the risk, perceived information gathering capacity, and perhaps perceived social norms for information gathering and holding.

The next section of this proposal offers a brief conceptual scaffolding for each stage of the model predicting to information sufficiency (the difference between knowledge currently held and that needed to cope with a risk), which is the primary focus of this analysis. A separate analysis, not reported here, will examine information seeking/processing behavior and its more proximate predictors (*i.e.*, the balance of the model). Similarly, analysis of the relationship of risk information seeking and processing to risk-related behavior will await the gathering of data on an array of behaviorally-related variables in subsequent waves of this survey.

### FILLING IN THE MODEL

To construct this model, we have borrowed concepts from several disciplinary groups, among them risk perception researchers, psychologists who study attitude formation and change, and communication scholars. The front of the model is indebted largely to the first group, while the back of the model owes much of its inspiration to the second. Communication research — particularly work that focuses on risk communication concepts — infuses the whole model and serves both as a kind of glue and as a tool for customizing concepts to better fit communication needs.

**Individual characteristics.** Our model begins with a set of variables representing the demographic/ sociocultural background of respondents as well as their political philosophy and experience with the hazard.

***Demographic/Sociocultural*** variables are found in most studies of risk perception to help absorb variance in the dependent variable of interest. Typically, some subset of those constructs does account for statistically significant amounts of variance, although they rarely engage the lion's share. Typical of their contribution is that found in an extensive survey of public attitudes in the United States about the management of such risks as nuclear power, handguns, auto travel and industrial chemical production (Gould et al., 1988). The researchers found that the addition of variables such as age, education, gender and political philosophy did account for variance in respondents' judgments about the acceptability of technology safety regulations (the dependent variable) but accounted for increases, on average, of only 3 percentage points.

Use of these kinds of demographic variables is further problematized by their atheoretical employment. For example, studies frequently demonstrate a difference in risk perception between men and women; typically, women perceive a higher level of risk than do men and signal greater levels of personal worry about that risk than men. How should one give meaning to such a gender difference? Psychologist Paul Slovic found not a gender difference in risk perception but a difference between white males and everyone else (*i.e.*, white women and minority men and women). The gender difference, he suggests, may be masking a difference in one's sense of control over one's environment. White males may simply feel more control than others (Slovic, 1994). Such findings suggest that we need to select and interpret individual characteristics carefully. We use the following for this study:

- **Gender** has been such a systematic predictor of variance in the past that we will employ it here. But we also utilize a measure of perception of personal control to control for that suggested dimension of gender meaning.
- **Ethnicity** similarly has been found to relate to risk perception, perhaps because of differences in (1) perceptions of personal control and/or (2) other factors such as differences in levels of exposure to (or

experience with) risks (Vaughn & Nordenstam, 1991). As controls, we include measures of relevant hazard experience.

- **Age** has typically — but not always — had a positive relationship with risk perception. That is, the older one is the more fearful one is. However, this reaction may be risk-specific, *e.g.*, concern about longer-term risks might decrease with age (*e.g.*, Fischer et al, 1991; Griffin, Dunwoody, Dybro & Zabala, 1994).
- **Socioeconomic status** also has an uneven history of prediction. However, status, like ethnicity, could affect exposure to various risks. And education — one of the major dimensions of SES — tends to be such an important predictor of an individual's ability to seek, process and retain information that "knowledge gaps" can develop between higher and lower status segments of society (Griffin, 1990; Olien, Donohue & Tichenor, 1983). Moreso than for lower status persons, higher status persons may even be expected by their friends and relatives to be keep up to date on the topic. One upshot is that blue-collar workers, for example, probably have a greater likelihood of personal harm from workplace hazards such as hazardous chemicals, but might not have the education that would enhance their ability to seek and process risk-relevant information.

***Political philosophy*** (liberalism-conservatism) could affect acceptance of hazard reduction regulations (Gould et al., 1988) and, more generally, trust in risk management institutions.

***Relevant hazard experience*** represents personal experience with a risk. Grunig (1983) observes that people tend to apply a referent criterion from past situations (*e.g.*, a cognition that can serve as a decision rule) as an initial guide when deciding how to think, behave or communicate in a new situation, and that they develop new criteria only if the referent criterion fails to work in outlining the new situation. In our model, we propose that a major referent criterion that people might apply to a hazard is their past experience with the same hazard or with what they might nominate as a related hazard, including their experiences with associated preventive behaviors. Personal experience with a risk has served as a strong predictor, in many studies, of a number of dependent variables, among them individuals' perceptions of the risk of recurrence of that hazard in future (Griffin, Dunwoody, Zabala & Kamerick, 1994), their perception of the extent of risk posed by a related hazard (Griffin, Dunwoody, Dybro & Zabala, 1994), and information seeking (Lenz, 1984; Johnson and Meischke, 1993).

**Informational subjective norms.** Informational subjective norms represent perceived social normative influences motivating the desire for information sufficiency. A person's perceptions that relevant others believe he or she should (or should not) perform a particular behavior can be at least as important a predictor of behavior as the person's own cognitions and attitudes about performing that behavior (Ajzen and Fishbein, 1980; Fishbein & Ajzen, 1975) and a person's own sense of control or capacity in performing that behavior (Ajzen, 1988). In this case, we are examining the extent to which such subjective norms might affect the person's behavior of risk information seeking and processing, and by extrapolation, to the knowledge a person believes he or she would be expected to hold about the risk. We expect that these subjective norms could be affected by various individual characteristics, such as social status as noted above, and that they might in turn influence information gathering and processing via effects on information sufficiency.

**Hazard characteristics and affective response.** Most studies of information use and processing employ some measure of issue salience, involvement or relevance as a predictor. As noted earlier, an issue judged to be personally relevant or important is more likely to generate systematic processing efforts than is an issue relegated to lower levels of importance or relevance (see, for example, Donohew, 1990; Petty & Cacioppo, 1981; Eagly & Chaiken, 1993). Constructs like salience or relevance, although clearly valuable to information studies, may be overly broad for use in studies of information and risk perception. Risks by definition have a very particular negative valence, and it is reasonable to assume that individuals' cognitive evaluations of a risk produce a response closely related to such constructs as relevance and salience but more specific and negatively valenced than either. We propose two stages of our model to capture this process: (1) perceived hazard characteristics, which include measures related to a sense of personal risk, trust in risk management, personal control over the risk, and a sense of threat to personal values; and (2) affective responses to the risk (*e.g.*, personal worry). We expect that the set of cognitive variables that comprise perceived hazard characteristics might combine in various ways to influence affective response and, like the relevance variable, will eventually affect the intensity of information seeking and processing.

***Perceived hazard characteristics.*** Risk perception researchers have convincingly argued that risk judgments are multidimensional, that is, that they take into account more than just estimates of the likelihood of coming to harm from exposure to a risk.

Perhaps the most visible proponent of multidimensional risk judgments is psychologist Paul Slovic, whose surveys of individuals' perceptions of risks and benefits led to a set of empirically defined groupings of risk characteristics and, ultimately, to groupings of risks themselves. He refers to his approach and the theoretical framework within which it is embedded as "the psychometric paradigm" (Slovic, 1992). Slovic originally demonstrated the utility of some 15 different risk characteristics but found that they could be grouped into a smaller set of higher-order characteristics that reflected the degree to which a risk is understood and the degree to which it evokes a "feeling of dread" (p.121). Gregory and Mendelsohn (1993), in a reanalysis of some of Slovic and colleagues' original survey data, found that six variables accounted for significant variance in respondents' assessments of perceived risk and of dread: (1) An estimate of the number of deaths that would take place "if next year is average"; (2) a judgment of the potential for catastrophic outcome; (3) an assessment of the immediacy of the effect; (4) an assessment of the economic benefits of the risk; (5) an assessment of the pleasure benefits of the risk; and (6) the estimated impact of the risk on future generations. In applying these variables to health risks in our model, we adjust variables 1 through 5 to represent perceptions of risk, seriousness, immediacy of onset, and benefits for the self rather than for society at large. We also supplement them with three other precursors:

- **(7) Personal control** — A self-evaluation of the level of personal control that the individual has over susceptibility to harm from the hazard (see, for example, Weinstein, 1993; Schwarzer, 1992; Ajzen & Timko, 1986; Rogers, 1985);
- **(8) Trust in risk management** — A judgment of the amount of trust the respondent has in the ability of others to prevent the respondent from coming to harm. This variable reflects a growing sentiment among risk perception researchers (see, for example, MacGregor et al., 1994; Flynn et al., 1992; Slovic, 1992; Wynne, 1992; Kasperson et. al., 1987) that individuals' judgments of how much they can trust "responsible" agencies and institutions may play a major role in the kinds of risk perceptions that we attempt to measure.
- **(9) Perceived threats to personal values** — Although few would argue with the proposition that values undergird much if not all of human activity, the relationship between values and risk judgment remains largely unexplored. Theoretically, Earle and Cvetkovich (1995) argue that judgments of risk increase when values are seen as being challenged or threatened.

***Affect, trust, and risk judgments.*** Although a link between an emotional response and risk judgments has a well-established history in the "fear appeals" literature (Dillard, 1994; Witte, 1994), affect's importance to researchers working outside of this tradition has been recognized only recently (Johnson and Tversky, 1983; Dunwoody and Neuwirth, 1991; Peters and Slovic, 1996). Quite typically, terms such as fear, dread, worry, and outrage are bandied about with scant attention paid to their theoretical status. More recently, Dillard and colleagues 1996) provide evidence that messages about a hazard designed to elicit fear can also rouse a variety of additional emotional responses.

Beliefs based on social trust also influence risk judgments. Indeed, researchers have identified trust as a key mediating factor in circumstances requiring collective action (Slovic, 1993; Earle and Cvetkovich, 1994). For the individual, social trust serves as a cognitive heuristic that decreases the complexities of social life to workable levels. Upon encountering potentially threatening events or conditions, people often make risk judgments based on social trust, a expectation that assigns to others the responsibility for working on some necessary task (Slovic, 1993; Earle and Cvetkovich, 1995). In essence, social trust entails a trade-off between internal and external reactions to risk. For example, increased social trust in an institutional arrangement such as municipal water utility means that a person will experience less personal worry and perceived vulnerability to the hazard of water borne parasites. Thus, social trust is seen as mutable, subject to change and modification as new information is received. When circumstances require cooperative social action, social trust derives from perceptions of institutional arrangements and social processes designed manage hazards (Rayner and Cantor, 1987; Rayner, 1992; Earle and Cvetkovich, 1995). The concept of social trust, in our view, extends beyond institutions formally charged with managing environmental risks to scientific institutions which provide the knowledge and technology to reduce risks and organizations such as the mass media that provide audiences with relevant information about hazards (Kosicki and McLeod, 1990). In our model, trust in media is considered part of "relevant channel beliefs" while trust in risk management and scientific institutions is part of "perceived hazard characteristics."

***Affect and information processing.*** A growing body of research indicates that emotional reactions and moods influence both heuristic and systematic processing. The main research finding is that positive moods and emotions are associated with heuristic information processing, while negative affective states are linked to systematic processing (Batra and Stayman, 1990; Kuykendall and Keating, 1990; Bohner and Apostolidou, 1994; Bohner, Chaiken and Hundyadi, 1994). However, extremely negative affective (fear) states appear to result in greater heuristic processing or avoidance (Jepson and Chaiken, 1990).

The influence of different emotions and their intensity in the formation of risk judgments and subsequent information seeking and processing is a relatively unexamined area, especially in field settings. In his project, we are emphasizing worry, anger, and uncertainty about a health risk. Consistent with previous findings (Griffin, Dunwoody, Zabala and Kamerick, 1994), we would expect worry to motivate information seeking and processing about a risk, even if indirectly, more than would the cognitive components of risk perception. Worry is considered here to be a manifestation of anxiety, distinguished by a recurrent negative affective state provoked by a future hazard. Anger is considered to be related to an attempt by the person to reassert control over the risk. Uncertainty, while not considered to be a "classical" emotional state, is often associated with negative emotional states such as fear, anxiety, and anger and is associated with dimensions such as the unknowability of outcome or consequences and a perceived loss of control. It also reflects aspects of judgmental confidence (or lack thereof) underlying the Eagly and Chaiken (1993) Heuristic-Systematic Model. In general, investigating the role of positive and negative affective responses to risk (Dillard et al., 1996; Ekman and Davidson, 1994; Plutchik and Kellerman, 1989; Frijda, 1986; Scherer, 1984) should greatly enhance our understanding of these connections.

***Information sufficiency.*** Our model proposes that subjective information gathering norms and affective response to a risk (*e.g.*, personal worry) will affect the confidence one wants to have in one's knowledge about the risk (information sufficiency threshold), in particular about how to behave (*i.e.*, protect oneself) in the face of the risk, which should manifest itself in a judgment of the amount of information the respondent feels he or she needs (*e.g.*, to take effective action). Further reflecting the approach of the HSM model (Eagly & Chaiken, 1993: 330-332), we propose that more effortful information seeking and processing will be motivated when the sufficiency threshold is higher than the amount of such information the respondent feels he or she currently has ("current knowledge").

Various individual characteristics, especially relevant hazard experience and social status, should affect what one actually knows about some hazards, as might some of the perceived hazard characteristics. We specify none of these relationships in the model, except for the expectation that social status in particular should account for a significant amount of variance in the perceived amount of information one currently has about a hazard.

## RESEARCH QUESTIONS AND HYPOTHESES

Our analysis will concentrate on examining the precursors to information sufficiency as illustrated in Figure 1, in particular examining relationships among informational subjective norms, institutional trust, risk judgment, affective response, and information sufficiency.

The first research question (**RQ1**) is: What are the relationships among informational subjective norms, institutional trust, risk judgment, affective response, and information sufficiency? We expect that:

**H1a.** Institutional trust will be negatively related to "risk judgment" *(perceived risk x seriousness)*.

**H1b.** Institutional trust will be negatively related to affective response.

**H1c.** Personal control will be negatively related to risk judgment.

**H1d.** Personal control will be negatively related to affective response.

**H1e.** Risk judgment will be positively related to affective response.

**H1f.** Affective response will be positively related to information sufficiency.

**H1g.** Informational subjective norms will be positively related to information sufficiency.

The second research question (**RQ2**) is: What are the relationships between individual characteristics and risk judgment, affective response, and information sufficiency? We expect that:

**H2.** Education (as an indicator of social status) will be positively related to self-reported current knowledge.

## METHOD

The purpose of the study is to test the Model of Risk Information Seeking and Processing by applying it across different risks and across different communities. The current analysis examines only part of the model and applies it to two potential health risks related to the Great Lakes: eating Great Lakes fish and drinking tap water drawn from the Great Lakes. Another part of the study, not reported here, will seek to find whether the model, originally developed to describe individuals' responses to personal health risks, can also be applied to reactions individuals might have to threats to the health of the Great Lakes ecosystem.

Great Lakes fish consumption is the health risk of primary concern in this study. Fish in the Great Lakes, like fish from other waters, can contain various chemicals, most notably polychlorinated biphenyls (PCBs). Human consumption of PCB-laden fish is a suspected cancer risk and has been associated with developmental problems in infants whose mothers had regularly eaten PCB-contaminated fish. Every year for the past quarter century, states surrounding the Great Lakes, including Wisconsin and Ohio, have issued advisories that warn people to avoid or limit consumption of certain sizes and varieties of fish and that suggest ways to prepare the fish to reduce exposure to chemical contamination. This information is available in pamphlets, sometimes in news media, and potentially via other sources as well.

The second health risk of concern, potential hazards lurking in municipal drinking water, is of course not limited to the Great Lakes. Municipal drinking water can contain substances such as chemicals and lead, as well as organisms that occasionally slip past municipal water treatment systems. In recent years, the United States has seen an increase in major outbreaks of various waterborne illnesses. Probably the most salient outbreak took place in 1993 in the Great Lakes community of Milwaukee, Wisconsin. A tiny parasite, cryptosporidium, entered the city drinking water from Lake Michigan and produced the largest recorded outbreak of waterborne disease in the nation's history — as well as national headlines. Milwaukee has since installed special monitoring equipment and is installing special treatment equipment. Nonetheless, cryptosporidium is difficult and expensive to detect and purge from municipal water systems and could potentially strike somewhere again. Thus, we are concentrating on an examination of people's responses to potential hazards from waterborne parasites.

The two health risks also offer different risk scenarios. Although both contain an element of uncertainty, as does nearly any risk, the uncertainties of the health impacts of eating PCB-contaminated fish are far greater than those of the hazards of drinking contaminated water. Health hazards from eating PCB-laden fish tend to be longer term in development and effects and relatively serious, while the hazards from drinking water infested with parasites such as cryptosporidium or giardia tend to be shorter term in development and effects and, for most people, less serious (*e.g.*, usually a bout with cramps and diarrhea). Thus, our model can be tested for now under these two conditions.

## Sampling and Interviewing

Two communities on the Great Lakes — Milwaukee, Wisconsin, on Lake Michigan and Cleveland, Ohio, on Lake Erie — were chosen as the research sites. These two medium-sized American cities, each on a different lake, have diverse populations that draw their drinking water from the lakes and have relatively ready access to commercially caught and sport-caught fish from the lakes. The two communities might respond similarly to risks from eating Great Lakes fish but somewhat differently to risks from drinking the water because of Milwaukee's recent bout with cryptosporidiosis.

From October 1996 to March 1997, the Wisconsin Survey Research Laboratory, a professional research organization associated with the University of Wisconsin-Extension, conducted a sample survey by telephone of 1,123 adult residents of the two metropolitan areas (579 in Milwaukee and 544 in Cleveland). The combined response rate was 55.2% (61.3% in Milwaukee and 50% in Cleveland). Residences were contacted by random-digit-dialing (RDD) and respondents were chosen randomly within households.

Interviews took approximately 20 minutes apiece. Applicable human subjects and informed consent practices were followed throughout. The interviews constituted the first wave of a three-wave, panel-design study to be conducted over three years. (Waves two and three will also include a series of behavioral questions not included in the first wave.)

At the start of the interview, respondents were assigned to one of three "paths" through the questionnaire. One path was comprised of questions dealing with the fish consumption risks, one path concerned the tap water risks, and the third path was composed of questions about risks to the Great Lakes ecosystem. All questions in the tap water path and most questions in the ecosystem path were identical in construction to questions in the fish path. This parallel construction was designed to allow meta-testing of the model by combining data across risks as much as possible. When respondents were to be presented with a series of items to be answered on the same kind of scale (*e.g.*, five point, Likert-type, agreement scale), the starting point in the series was chosen randomly.

Since applying the model to fish consumption risks was our primary goal, the interviewers' first questions were designed to net respondents for whom eating Great Lakes fish was a relevant personal matter. Respondents were assigned to the fish path if they had eaten a meal of Great Lakes fish that year or if they had made a decision to avoid these fish specifically because of health concerns. In all, 634 respondents (326 in Milwaukee, 308 in Cleveland) were assigned to the fish path. The balance of respondents were randomly assigned to the other two paths in the questionnaire — in particular, 252 to the water path (137 in Milwaukee and 115 in Cleveland). We assumed that drinking local tap water was also relevant personal matter for residents in the two communities. Two potential analytical drawbacks of this approach are (1) the relatively small subsample size in the water path and (2) the fact that respondents in that path are unlike the majority of respondents who eat Great Lakes fish or avoid them for health reasons.

## Questionnaire Development

To aid in the development of the questionnaire, the Wisconsin Survey Research Laboratory conducted four focus groups with a random sample of Milwaukee area residents in the spring of 1996. The focus groups were designed to gather information about various components of the model that needed some exploratory investigation, including affective responses and information needs in regard to Lake Michigan and fish contamination. Intelligence from the focus group analyses was used to help prepare draft questionnaires distributed to a convenience sample of 301 students at the researchers' three universities in the summer of 1996. These questionnaires operationalized all of the model components across a variety of risks, including risks from consuming contaminated fish and drinking water, risks from exposure to the sun, and risks to the aquatic ecosystem. Item and scale analyses, conducted primarily by combining the data across risks and universities, yielded the measures to be used in the actual survey. The Wisconsin Survey Research Laboratory then conducted three telephone pretests of the resulting questionnaire with random samples of Milwaukee and Cleveland residents before actual interviews began in late October 1996. Budget constraints required the exclusion of some variables, including measures of personal benefits related to the risks and perceived threats to personal values.

## Measurement

***Individual Characteristics.*** Three sets of individual characteristics are used as control variables in this analysis: **(1)** demographic/sociocultural variables, **(2)** political philosophy, and **(3)** hazard experience variables.

**Demographic/Sociocultural** variables include age, gender, annual income, education (measured in terms of the highest grade or year of school completed), and ethnicity (whether the person is a member of a minority group). Reliability of a social status index, to be comprised of income and education, was only marginal (Cronbach's alpha=.49), so instead both income and education are used as individual predictors in this analysis. The respondent's community — Milwaukee (coded as 1) or Cleveland (2) — is also included as a control variable in analyses involving both communities.

**Political Philosophy** was measured on a single, five-point scale ranging from "liberal" (coded as 1) to "conservative" (5) and is represented by the variable "political conservatism" in the tables.

**Hazard Experience** variables include whether the person reports ever having been ill from a waterborne parasite such as cryptosporidium or giardia and whether the person reports ever having been ill from food poisoning. ("No" or "don't know" responses were coded as 0, "yes" as 1). Both are risks from ingestion that persons in the surveyed communities should be able to relate to somewhat readily. Persons who had become ill from a waterborne parasite might judge tap water parasite risks as more probable or more serious. Contracting cryptosporidiosis can even affect a person's judgments of risk from drinking tap water containing trace amounts of lead, a longer-term hazard that is related to cryptosporidiosis only by virtue of sometimes sharing the same vehicle of transmission (Griffin, Dunwoody, Dybro and Zabala, 1994). Therefore it is possible that contracting illness from a waterborne parasite might, by extension, also affect judgments of risk from eating fish. Similarly, having contracted food poisoning might affect judgments of risk from consuming Great Lakes tap water and fish.

***Informational Subjective Norms.*** Informational subjective norms were measured by a single item similar to Ajzen's (1988) formulation for assessing subjective norms for any behavior:

> "People who are important to me would expect me to stay on top of information about...[the risk from eating Lake (Michigan) (Erie) fish] [the risk from drinking Lake (Michigan) (Erie) tap water]."

Specific wording, as illustrated, depended on the respondent's community and path through the questionnaire. Responses were recorded on a five-point, Likert-type, agree-disagree scale. Greater agreement yielded higher scale values.

***Perceived Hazard Characteristics.*** Perceived Hazard Characteristics were limited in this analysis to three essential variables: **(1)** personal control over the risk, **(2)** institutional trust, and **(3)** risk judgment.

**Personal control** was measured by a single item responded to on a five-point, Likert-type, agree-disagree scale:

> "In my life, it would be easy for me to avoid becoming ill from [eating contaminated Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water that was contaminated]."

Greater agreement yielded higher scale values. The item was adapted from one of Ajzen's (1988) measures of perceived behavioral control. It represents a summary judgment the individual makes about both personal efficacy (*i.e.*, whether one can perform a health-protective action) and response efficacy (*i.e.*, whether the action to be taken is efficacious in preventing illness) in a health risk context (see Bandura, 1977).

**Institutional trust** is a four-item, summated index (Cronbach's alpha=.73) of trust in governmental and scientific institutions to protect one from the specific health risk. Risk judgments are based in part on judgments of social trust when circumstances require cooperative social action (Rayner & Cantor, 1987; Krimsky & Golding, 1992; Rayner, 1992; Earle & Cvetovich, 1995), such as would be the case with environmental health risks from contaminated fish or tap water. Therefore, the following items comprised the measure of institutional trust:

> "Government officials care about the health and safety of people like me."
>
> "Eventually science will find a way to overcome most risks to human health."
>
> "Government is doing a competent job of protecting people's health from risks related to [eating contaminated Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water]."
>
> "I trust government to protect me from risks related to [eating contaminated Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water]."

Respondents used five-point, Likert-type, agree-disagree scales to react to these items. Higher scale values represent higher levels of institutional trust.

**Risk judgment** is the product of two measures, one representing the subjective probability of becoming ill from exposure to the hazard and the other representing the perceived seriousness of the illness.[1] The measure of subjective probability was:

> How likely are *you* to become ill in the future from [eating contaminated fish caught in Lake (Michigan) (Erie)] [drinking tap water drawn from Lake (Michigan) (Erie)]? Please use a scale from zero to 10, where zero means that you would have absolutely no chance whatsoever of becoming ill, and 10 means that you are certain to.

The measure of perceived seriousness was:

> If you were to become ill from [eating contaminated Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water], how serious do you think this illness would be? Please use a scale of zero to 10, where zero means not serious at all and 10 means it would be as serious as it can possibly be.

***Affective Response.*** Affective response is the sum of three variables (Cronbach's alpha=.85) representing the amount of worry, anger, and uncertainty respondents felt toward the risk.[2] A sample item is:

> Now we'd like to know your feelings about [contaminated fish] [the risk of contaminated tap water]. Please use a number from zero to ten, where zero means you have "none of this feeling" and ten means you have "a lot of this feeling."

> When you think about the possible *health risks posed to you* from [eating Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water], how much worry do you feel?

Respondents were also asked how much anger and how much uncertainty they felt.

***Information Sufficiency.*** Information sufficiency was derived by juxtaposing in the analysis two self-report variables: (1) current knowledge about the risk and (2) the information sufficiency threshold.[3] (Please see the section on analysis for a description of the use of these variables.)

**Current knowledge** was measured as follows:

> Now, we would like you to rate your knowledge about this risk. Please use a scale of zero to 100, where zero means knowing nothing and 100 means knowing everything you could possibly know about this topic. Using this scale, how much do you think you currently know about the risk from [eating Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water]?

**Sufficiency threshold** was measured as follows:

> Think of that same scale again. This time, we would like you to estimate how much knowledge you would *need* to deal adequately with the possible risk from [eating Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water] in your own life. Of course, you might feel you need the same, more, or possibly even less, information about this topic. Using a scale of zero to 100, how much information would be sufficient for you, that is, good enough for your purposes?

**Analysis**

The Statistical Package for the Social Sciences was used to perform a series of hierarchical multiple regression analyses in path-analytic format.[4] The analyses concentrated on examining the relationships among informational subjective norms, risk judgment, affective response, and information sufficiency.

Current knowledge was entered as the first block in regressing sufficiency threshold so that variables entered later were predicting to the difference ("information sufficiency") between current knowledge and sufficiency threshold.[5] To make results comparable across analyses, current knowledge was also entered as the first block in regressions of risk judgment and affective response. The first analysis in the series regressed risk judgment on blocks of (1) current knowledge, (2) individual characteristics used as control variables, (3) information subjective norms, and (4) the other "perceived hazard characteristics" variables — institutional trust and personal control. The second analyses regressed affective response on the same blocks plus risk judgment. The third analysis regressed sufficiency threshold on the above blocks plus affective response. Listwise deletion of cases with missing data was used throughout.[6]

The primary test of these relationships was conducted by combining data across both risks and both communities (N=801). To perform internal replications, parallel analyses were performed by combining data about both health risks in each community individually (n=427 in Milwaukee, 374 in Cleveland), by examining data about each health risk individually in the two communities combined (n=585 for the fish path, 216 for tap water path), and finally by examining data from each health risk in each community (n=305 for the fish path in Milwaukee, 208 for the fish path in Cleveland, 122 for the tap water path in Milwaukee, and 94 for the tap water path in Cleveland).

## RESULTS AND DISCUSSION

The first research question (**RQ1**) was: What are the relationships among informational subjective norms, institutional trust, risk judgment, affective response, and information sufficiency?[7]

**Trust with risk judgment, affective response.** The first two hypotheses proposed that institutional trust would be negatively related to risk judgment (**H1a**) and affective response (**H1b**). When data are combined across communities and across risks (see the first set of three data columns in **Table 1**), institutional trust does indeed bear negative relationships with risk judgment (beta = -.19, p<.001) and affective response (beta = -.19, p<.001). Also consistent with the model, the direct path of influence of institutional trust does not extend past affective response to sufficiency threshold. This same pattern holds true for the combined health risks within each community (see the second and third sets of columns in Table 1), for each risk across both communities (see the second and third sets of columns in **Table 2**), and for fish risks alone in each community (see the second and third sets of columns in **Table 3**). The pattern holds true for tap water risks in the Milwaukee subsample (second set of columns in **Table 4**), but not in Cleveland (third set of columns in Table 4), although the small subsample size (n=94) might have rendered insignificant the relationship between institutional trust and affective response (beta = -.15, ns). In general, H1a and H1b are supported in all but one comparison.

**Personal control with risk judgment, affective response.** The next two hypotheses proposed that personal control will be negatively related to risk judgment (**H1c**) and affective response (**H1d**). There are no statistically significant relationships between personal control and affective response in any of the comparisons across all tables. Thus H1d is not supported. There are no statistically significant relationships between personal control and risk judgments in any of the comparisons except for tap water risks in the Milwaukee subsample (Table 4) where lower levels of personal control are indeed associated with higher risk judgments (beta = -.16, p<.05). Thus, H1c is generally not supported.

It is possible that the single-item "ease" measure being used is not sensitive to variance in feelings of personal control except when a respondent can readily visualize the hazard, as might be expected in

## Table 1:
## Regression of Risk Judgment, Affective Response and Information Sufficiency by Community, Combining Both Health Risks

| | Both Health Risks: Both Communities | | | Both Health Risks: Milwaukee | | | Both Health Risks: Cleveland | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Risk Judgment** | **Affective Response** | **Sufficiency Threshold** | **Risk Judgment** | **Affective Response** | **Sufficiency Threshold** | **Risk Judgment** | **Affective Response** | **Sufficiency Threshold** |
| **Current Knowledge** | .04 | -.03 | .27*** | .02 | .02 | .30*** | .06 | -.09* | .27*** |
| **INDIVIDUAL CHARACTERISTICS** | | | | | | | | | |
| **Political Conservatism** | -.04 | -.07* | -.03 | -.03 | -.07 | -.04 | -.05 | -.08 | -.01 |
| **DEMOGRAPHIC/ SOCIOCULTURAL** | | | | | | | | | |
| **Community** | -.03 | -.05 | -.01 | | | | | | |
| **Education** | -.11** | -.08* | .00 | -.12* | -.05 | -.03 | -.10 | -.11* | .02 |
| **Income** | -.05 | -.05 | -.02 | -.06 | -.04 | -.04 | -.04 | -.06 | .00 |
| **Age** | .06 | -.04 | -.10** | .07 | -.04 | -.10* | .03 | -.05 | -.09 |
| **Female Gender** | .07 | .09** | .08* | .07 | .10* | .09* | .06 | .08 | .06 |
| **Racial Minority** | .06 | .15*** | .05 | .01 | .13** | .13** | .14** | .16*** | -.02 |
| **HAZARD EXPERIENCE** | | | | | | | | | |
| **Food Poisoning** | .03 | .04 | .05 | -.02 | .00 | .05 | .09 | .08 | .05 |
| **Waterborne Parasite** | .13*** | .03 | -.04 | .15** | .04 | -.01 | .06 | -.03 | -.12* |
| **Informational Subjective Norms** | .09** | .25*** | .15*** | .11* | .26*** | .10* | .07 | .25*** | .20*** |
| **PERCEIVED HAZARD CHARACTERISTICS** | | | | | | | | | |
| **Institutional Trust** | -.19*** | -.19*** | .02 | -.20*** | -.24*** | -.03 | -.19*** | -.13*** | .06 |
| **Personal Control** | -.04 | .00 | -.06 | -.07 | .00 | -.07 | .02 | .00 | -.04 |
| **Risk Judgment** | | .34*** | -.05 | | .33*** | -.02 | | .34*** | -.07 |
| **Affective Response** | | | .26*** | | | .21*** | | | .31*** |
| **Multiple R** | .33*** | .61*** | .47*** | .34*** | .62*** | .48*** | .32*** | .61*** | .50*** |
| **Adjusted $R^2$** | .10 | .36 | .20 | .09 | .37 | .20 | .08 | .35 | .22 |
| **N(n)** | 801 | 801 | 801 | 427 | 427 | 427 | 374 | 374 | 374 |

Key: * p≤.05 **p≤.01 ***p≤.001

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# Table 2:
# Regression of Risk Judgment, Affective Response and Information Sufficiency by Health Risk, Combining Both Communities

| | Both Health Risks: Both Communities | | | Fish Risks: Both Communities | | | Tap Water Risks: Both Communities | | |
|---|---|---|---|---|---|---|---|---|---|
| | Risk Judgment | Affective Response | Sufficiency Threshold | Risk Judgment | Affective Response | Sufficiency Threshold | Risk Judgment | Affective Response | Sufficiency Threshold |
| **Current Knowledge** | .04 | -.03 | .27*** | .04 | -.08* | .26*** | -.02 | .13* | .35*** |
| **INDIVIDUAL CHARACTERISTICS** | | | | | | | | | |
| **Political Conservatism** | -.04 | -.07* | -.03 | -.07 | -.07* | -.04 | .04 | -.16** | -.02 |
| **DEMOGRAPHIC/ SOCIOCULTURAL** | | | | | | | | | |
| **Community** | -.03 | -.05 | -.01 | -.01 | -.05 | -.03 | -.13 | -.08 | .05 |
| **Education** | -.11** | -.08* | .00 | -.12* | -.07 | .02 | -.08 | -.15* | -.06 |
| **Income** | -.05 | -.05 | -.02 | -.06 | -.05 | .01 | -.06 | -.06 | -.05 |
| **Age** | .06 | -.04 | -.10** | .07 | -.02 | -.08* | .03 | -.14* | -.16* |
| **Female Gender** | .07 | .09** | .08* | .06 | .11** | .07 | .09 | .05 | .06 |
| **Racial Minority** | .06 | .15*** | .05 | .08 | .17*** | .06 | -.01 | .07 | .04 |
| **HAZARD EXPERIENCE** | | | | | | | | | |
| **Food Poisoning** | .03 | .04 | .05 | .02 | .05 | .07 | .04 | -.02 | .01 |
| **Waterborne Parasite** | .13*** | .03 | -.04 | .10* | .05 | -.07 | .25*** | -.10 | -.02 |
| **Informational Subjective Norms** | .09** | .25*** | .15*** | .08* | .26*** | .15*** | .10 | .17** | .17** |
| **PERCEIVED HAZARD CHARACTERISTICS** | | | | | | | | | |
| **Institutional Trust** | -.19*** | -.19*** | .02 | -.16*** | -.14*** | .02 | -.19** | -.23*** | .00 |
| **Personal Control** | -.04 | .00 | -.06 | -.05 | -.03 | -.05 | -.12 | -.01 | -.03 |
| **Risk Judgment** | | .34*** | -.05 | | .32*** | -.09* | | .36*** | .13 |
| **Affective Response** | | | .26*** | | | .29*** | | | .17* |
| **Multiple R** | .33*** | .61*** | .47*** | .31*** | .61*** | .46*** | .45*** | .61*** | .53*** |
| **Adjusted $R^2$** | .10 | .36 | .20 | .07 | .35 | .19 | .15 | .33 | .23 |
| **N(n)** | 801 | 801 | 801 | 585 | 585 | 585 | 216 | 216 | 216 |

Key: * p≤.05 **p≤.01 ***p≤.001

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# Table 3:
## Regression of Risk Judgment, Affective Response and Information Sufficiency for Fish Risks, by Community

| | Fish Risks: Both Communities | | | Fish Risks: Milwaukee | | | Fish Risks: Cleveland | | |
|---|---|---|---|---|---|---|---|---|---|
| | Risk Judgment | Affective Response | Sufficiency Threshold | Risk Judgment | Affective Response | Sufficiency Threshold | Risk Judgment | Affective Response | Sufficiency Threshold |
| **Current Knowledge** | .04 | -.08* | .26*** | .05 | .00 | .28*** | .03 | -.17*** | .24*** |
| **INDIVIDUAL CHARACTERISTICS** | | | | | | | | | |
| **Political Conservatism** | -.07 | -.07* | -.04 | -.08 | -.09 | -.04 | -.07 | -.04 | -.04 |
| **DEMOGRAPHIC/ SOCIOCULTURAL** | | | | | | | | | |
| **Community** | -.01 | -.05 | -.03 | | | | | | |
| **Education** | -.12* | -.07 | .02 | -.14* | -.02 | -.01 | -.07 | -.11* | .04 |
| **Income** | -.06 | -.05 | .01 | -.09 | -.01 | -.01 | -.05 | -.07 | -.01 |
| **Age** | .07 | -.02 | -.08* | .07 | .03 | -.05 | .06 | -.06 | -.10 |
| **Female Gender** | .06 | .11** | .07 | .09 | .10* | .11* | .03 | .12* | .03 |
| **Racial Minority** | .08 | .17*** | .06 | -.02 | .15** | .13* | .21*** | .20*** | .01 |
| **HAZARD EXPERIENCE** | | | | | | | | | |
| **Food Poisoning** | .02 | .05 | .07 | -.04 | .00 | .09 | .09 | .10 | .05 |
| **Waterborne Parasite** | .10* | .05 | -.07 | .11 | .07 | -.05 | .07 | -.01 | -.11* |
| **Informational Subjective Norms** | .08* | .26*** | .15*** | .12* | .28*** | .07 | .03 | .25*** | .23*** |
| **PERCEIVED HAZARD CHARACTERISTICS** | | | | | | | | | |
| **Institutional Trust** | -.16*** | -.14*** | .02 | -.14* | -.16** | .00 | -.19** | -.11* | .05 |
| **Personal Control** | -.05 | -.03 | -.05 | -.07 | -.05 | -.08 | -.01 | -.01 | -.03 |
| **Risk Judgment** | | .32*** | -.09* | | .35*** | -.06 | | .29*** | -.10 |
| **Affective Response** | | | .29*** | | | .26*** | | | .31*** |
| Multiple R | .31*** | .61*** | .46*** | .34*** | .61*** | .46*** | .34*** | .62*** | .50*** |
| Adjusted $R^2$ | .07 | .35 | .19 | .08 | .35 | .18 | .08 | .35 | .21 |
| N(n) | 585 | 585 | 585 | 305 | 305 | 305 | 280 | 280 | 280 |

Key: * p≤.05 **p≤.01 ***p≤.001

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# Table 4:
# Regression of Risk Judgment, Affective Response and Information Sufficiency for Tap Water Risks, by Community

| | Tap Water Risks: Both Communities | | | Tap Water Risks: Milwaukee | | | Tap Water Risks: Cleveland | | |
|---|---|---|---|---|---|---|---|---|---|
| | Risk Judgment | Affective Response | Sufficiency Threshold | Risk Judgment | Affective Response | Sufficiency Threshold | Risk Judgment | Affective Response | Sufficiency Threshold |
| **Current Knowledge** | -.02 | .13* | .35*** | -.08 | .16* | .40*** | .09 | .09 | .29** |
| **INDIVIDUAL CHARACTERISTICS** | | | | | | | | | |
| **Political Conservatism** | .04 | -.16** | -.02 | .12 | -.02 | -.02 | -.15 | -.31** | .08 |
| **DEMOGRAPHIC/ SOCIOCULTURAL** | | | | | | | | | |
| **Community** | -.13 | -.08 | .05 | | | | | | |
| **Education** | -.08 | -.15* | -.06 | .09 | -.12 | -.12 | -.25* | -.20 | .06 |
| **Income** | -.06 | -.06 | -.05 | -.05 | -.10 | -.09 | -.09 | -.01 | .00 |
| **Age** | .03 | -.14* | -.16* | .06 | -.28** | -.25* | -.09 | -.01 | .00 |
| **Female Gender** | .09 | .05 | .06 | .04 | .10 | .06 | .18 | -.07 | .10 |
| **Racial Minority** | -.01 | .07 | .04 | .14 | .07 | .12 | -.23* | .11 | -.07 |
| **HAZARD EXPERIENCE** | | | | | | | | | |
| **Food Poisoning** | .04 | -.02 | .01 | .02 | -.11 | -.07 | .03 | .03 | .06 |
| **Waterborne Parasite** | .25*** | -.10 | -.02 | .34*** | -.06 | .03 | -.03 | -.10 | -.15 |
| **Informational Subjective Norms** | .10 | .17** | .17** | .08 | .15* | .18* | .10 | .24* | .12 |
| **PERCEIVED HAZARD CHARACTERISTICS** | | | | | | | | | |
| **Institutional Trust** | -.19** | -.23*** | .00 | -.28** | -.31*** | -.11 | -.04 | -.15 | .06 |
| **Personal Control** | -.12 | -.01 | -.03 | -.16* | -.04 | -.05 | -.08 | -.03 | -.04 |
| **Risk Judgment** | | .36*** | .13 | | .28** | .12 | | .39*** | .08 |
| **Affective Response** | | | .17* | | | .03 | | | .28* |
| **Multiple R** | .45*** | .61*** | .53*** | .52*** | .66*** | .59*** | .41 | .63*** | .55** |
| **Adjusted $R^2$** | .15 | .33 | .23 | .19 | .37 | .26 | .05 | .31 | .18 |
| **N(n)** | 216 | 216 | 216 | 122 | 122 | 122 | 94 | 94 | 94 |

Key: * p≤.05 **p≤.01 ***p≤.001

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Milwaukee in the aftermath of their battle with cryptosporidiosis. The measure might also be too broad in attempting to encompass both personal efficacy and response efficacy. This item will be supplemented in the second and third waves of the survey with more comprehensive measures of *perceived behavioral control*, to represent personal efficacy, and of *behavioral beliefs* about the effectiveness of actions persons can take to protect themselves from risk, to represent response efficacy, based on Ajzen's (1988) formulations.

**Risk judgment with affective response.** Hypothesis **H1e** proposed that risk judgment will be positively related to affective response. The hypothesis is readily supported when data are combined across communities and across risks (beta = .36, p<.001 in Table 1) and the relationship remains approximately equal in magnitude in all other comparisons in all tables. Consistent with the path model, risk judgment is much more strongly related to affective response than to information sufficiency (see column under "sufficiency threshold" in all tables) in a pattern that is quite similar across all comparisons.

**Affective response, informational subjective norms with information sufficiency.** The next two hypotheses reflect the model's proposition that affective response (**H1f**) and/or informational subjective norms (**H1g**) will be positively related to information sufficiency. When data are combined across communities and across risks, information sufficiency does indeed bear positive relationships with informational subjective norms (beta = .15, p<.001 in Table 1) and affective response (beta = .26, p<.001 in Table 1). With the exception of current knowledge (which was entered first as part of the process of creating the information sufficiency variable), both variables bear stronger relationships with information sufficiency than any other variable in that analysis. That result is consistent with the model's expectations.

Across comparisons in the other tables, the relationship of affective response to information sufficiency is generally more robust and consistent than is the relationship of informational subjective norms. The relationship of affective response to information sufficiency remains significant in all but one comparison — tap water risks in Milwaukee as shown in Table 4. Similarly, the relationship of informational subjective norms information sufficiency remains significant in all but two comparisons — fish risks in Milwaukee as shown in Table 3 and tap water risks in Cleveland as shown in Table 4.

Not anticipated by the model, however, are the somewhat stronger relationships that informational subjective norms usually has with affective response (beta = .25, p<.001, for the combined overall data in Table 1 and significant in all comparisons across all tables). There is also a small relationship between informational subjective norms and risk judgment (beta = .09, p<.01, for the combined overall data in Table 1) which can be traced primarily to the relationship between those variables as related to fish risks in Milwaukee (Table 3). It is possible that the wording of the item that measures informational subjective norms ("people who are important to me *would expect me to* stay on top of information about...")may contain the kind of ambiguity which could lead to these patterns.[8] A better phrasing would be "...*think that I should* stay on top of information about..." This item will be altered for the second and third waves of the survey, and a companion item will be added, representing Ajzen's (1988) formulation for measuring overall subjective norms.

In general, H1f (the relationship of affective response) is supported in all but one comparison. Support for H1g (the relationship of informational subjective norms) is somewhat tentative, perhaps because of the upshot of what may be faulty wording. Most notably, however, and consistent with expectations, whenever one of these two variables does not bear a significant relationship with information sufficiency, the other one does. (Analysis of the reasons for risk-by-community differences in prediction of information sufficiency by affective response or informational subjective norms goes beyond the scope of this paper.)

**Individual characteristics**. The second research question (**RQ2**) is: What are the relationships between individual characteristics and risk judgment, affective response, and information sufficiency?

As illustrated in Table 1 and developed in Tables 2 through 4, the separate variables representing individual characteristics tend to have usually small and sporadic direct relationships with risk judgment, affective response, and sufficiency threshold. This result is consistent with expectations and with the model which proposed that other variables should intervene. A few noteworthy patterns do reveal themselves, however.

***Women and minorities***, as illustrated in Tables 1 and 3, do tend to respond affectively to risks, in particular from eating Great Lakes fish, a little more than do men and non-minorities (beta = .11, p<.01, for female gender and beta = .17, p<.001, for racial minority in Table 3). This relationship appears not to be mitigated by feelings of personal control. T-tests of the relationship between personal control and these two individual characteristics (not shown) are non-significant. Men do self-report higher levels of current knowledge about the risks, however ($t_{853}$=4.30, p<.001). As noted earlier, however, a more comprehensive measure of personal control might reveal patterns that our single-item measure is not responding to.

***Hazard experience*** with becoming ill from a waterborne parasite does indeed affect tap water risk judgments in Milwaukee (beta = .34, p<.001, in Table 4), as might certainly be expected. It also bears a slight relationship with fish risk judgments (beta = .10, p<.05) when data are combined across both communities (Table 3). It does not appear, however, that this kind of experience with a parasite provides a strong referent criterion for dealing with risks from eating fish. Likewise, experience with food poisoning is unrelated to risk judgment, affective response, or sufficiency threshold for either fish or tap water risks. However, those who had suffered food poisoning do report slightly higher levels of current knowledge about fish risks ($t_{619}$=2.83, $p<.01$) and tap water risks ($t_{232}$=2.21, $p<.05$) and those who have had a bout with a parasite do sense higher levels of current knowledge about tap water risks ($t_{232}$=3.97, $p<.001$). Thus, at least food poisoning might bear some perceived similarity to fish and tap water risks, but at a rather basic cognitive level.

***Age and conservatism*** reveal two of the stronger relationships with affective response to tap water risks (Table 4) among the individual characteristics variables. Political conservatives in Cleveland (beta = -.31, $p<.01$) and older people in Milwaukee (beta=-.28, $p<.01$) are less likely to respond affectively to tap water risks. Older Milwaukeeans are also less likely to desire more information to deal with tap water risks (beta= -.25, $p<.05$). These patterns may be based on local conditions that are beyond the analysis scope of this paper.

***Education***, as an indicator of social status, is related positively to self-reported current knowledge ($r=.15$, $p<.001$), as hypothesized from the model (H2) and the knowledge-gap model. However, the relationship is not as strong as might be expected. Income bears a similar but weaker relationship with current knowledge ($r=.11$, $p<.01$) and is generally inactive as a variable in Tables 1-4.

## CONCLUSION

The results indicate that much can be learned from an audience-based approach to understanding risk communication.

In this analysis, the strongest results seem to suggest a path of influence from lower institutional trust to higher risk judgments to stronger affective responses to the risk (specifically, worry, anger, and uncertainty) to a perception that more information is needed to allow oneself to deal adequately with a health risk. Institutional trust also has some apparent influence on how a person responds affectively to a risk. That seems appropriate, since institutional trust itself has overtones both cognitive and affective.

Consistent with the model, information sufficiency was found to be affected in all comparisons by affective response and/or informational subjective norms. However, informational subjective norms did not relate to information sufficiency as strongly as might be expected from the model and related unexpectedly to affective response and, to a much lesser degree, risk judgment. It is likely that the problem is one of measurement rather than theory, and so an improved measure will be adopted and tested out in the future. Since subjective norms can predict other forms of behavior (Ajzen, 1988), they might be valuable predictors of communication behavior as well.

Personal control was relatively inactive as a variable in this analysis although it is normally considered to be an important predictor of risk judgments and risk-related behaviors. Again, it is probable that the problem is one of measurement rather than theory and improved measurement will be tested out in the future.

**Further research.** Along with testing improved measures of subjective norms and personal control, the next stages of research in this program will (1) test hypotheses derived from the remainder of the model (*i.e.*, direct predictors of risk information seeking and processing behaviors) and (2) test hypotheses about the relationship of risk information seeking and processing to the performance and maintenance of preventive behaviors. The latter will rely a lot on Ajzen's (1988) Theory of Planned Behavior as adapted to the performance of preventive behaviors and operationalized in a survey research setting. The program will also examine whether the model of risk information seeking and processing can be applied to perceptions of risk not to oneself but to the ecosystem. Over time, research in this program will also seek to include variables that were omitted from this analysis due to time and budget constraints, such as measures of personal benefits related to risks and perceived threats to personal values, and apply the model to a variety of health risks.

**Reprise.** The means of testing the model through combining data across risks and communities and then by internal replications across risks and communities was very valuable. The model predicted results rather well in regard to risks from eating Great Lakes fish but less so in regard to drinking Great Lakes tap water. The tap water risk analysis, however, might have been hampered by relatively small (therefore unstable) subsample sizes and by the somewhat unrepresentative nature of respondents in that path.

In general, however, the Model of Risk Information Seeking and Processing, at least as tested so far, seems to offer promise as a research and theoretic tool to guide inquiry.

## NOTES

1. Although subjective probability and perceived seriousness need not be correlated, they are in this study (r=.50, p<.001), yielding Cronbach's alpha of .66 for the risk judgment scale. A third measure, representing the perceived immediacy of the onset of the illness, was not used in the development of the risk judgment scale because it had low correlations with other variables in the analysis. It was uncorrelated with subjective probability and perceived seriousness. These conditions might be unique to these communities and this set of risks, however.

2. Future analyses will parse out these three affective responses.

3. Although current knowledge and sufficiency threshold need not be correlated, they are in this study (r=.27, p<.001). To help validate the information sufficiency measure, we ran first-order partial correlations between sufficiency threshold and four related measures in the questionnaire, with control for current knowledge. Results reinforce the construct validity of information sufficiency. Specifically, sufficiency threshold correlates positively with the item "When the topic of risks from [eating Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water] comes up, I try to learn more about it" (partial r=.26, p<.001); positively with the item "When it comes to the risks from [eating Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water], I'm likely to go out of my way to get more information" (partial r=.30, p<.001); negatively with the item "What I know about this topic is enough" (partial r=-.35, p<.001); and negatively with the item "Gathering a lot of information on the risks from [eating Lake (Michigan) (Erie) fish] [drinking Lake (Michigan) (Erie) tap water] is a waste of time" (partial r=-.31, p<.001). Parrott et al. (1998) found that self-reported (perceived) current knowledge of how to adapt to the health risks from skin cancer correlated positively with objectively tested knowledge of those procedures and with adopting preventive and detection behaviors.

4. The single-item measure of perceived impact of the risk on future generations was removed from the regression analysis because of multicollinearity problems.

5. We used the regression approach to be consistent with Cohen and Cohen (1975), who consider it superior to calculating change/difference scores.

6. To conserve N, missing data in the control variables (the block of "individual characteristics" variables) were replaced with a suitable measure of central tendency. Otherwise, missing data were not replaced.

7. There is no significant relationship between institutional trust and informational subjective norms ® = -.02, ns), nor was one expected.

8. The wording "expect me to" could be interpreted in a behaviorally predictive rather than normative way by a number of people. Those with stronger affective responses to the risk might presume that others close to them would simply anticipate (not prescribe) that they would keep on top of information about the risk.

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Running head: THERAPEUTIC

# The Therapeutic Application of Television: An Experimental Study

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## Abstract

Television has been criticized for contributing to a great many antisocial effects, but it does have beneficial effects as well. This study examines television's effects on the mental and emotional health of outpatients. It was hypothesized that the viewing of a nature video would significantly reduce the outpatients' stress levels. An exploratory field experiment was conducted to test this hypothesis, and the results demonstrated tentative support.

# The Therapeutic Application of Television

## An Experimental Study

Television, or more specifically television use, has been criticized for contributing to a great many antisocial effects, yet the number of daily hours of television use per household has continued to increase since World War II (Mayer, 1993). Starting in 1964, when television penetration reached 95 percent (Mayer, 1993), the daily average of television use per household has risen from 5 hours and 12 minutes (A.C. Nielsen, 1973) to 7 hours and 14 minutes in 1997 (Media Dynamics, 1997). This increase in the number of viewing hours per household has lead some in the popular press (Davis, 1993; Goleman, 1990 Winn, 1985; Wilkins, 1982), and many in the general public (Finn, 1992; Goleman, 1990; R. Smith, 1986), to call television addictive. This popular belief in the addictive nature of television has also been examined by the academic community, although the results of their investigations have proven inconclusive. Finn (1992) and R. Smith (1986), for example, report that television addiction does not exist, yet Kubey (1996) and McIlwraith, Jacobvitz, Kubey and Alexander (1991) give tentative support to the concept of television addiction. What all of these studies do agree on, however, is that television has the ability to alter the viewer's mood. Does television act like other mood-altering drugs? More importantly, if television does alter mood, does it have therapeutic applications? The answer to this last question is the primary purpose of this study.

## Stress: An Overview

Stress is part of everyday life. It has been associated with numerous diseases (Newberry, Jaikins-Madden, & Gerstenberger, 1991; O'Leary, 1990; Greenberg, 1993), including heart attacks (Lown, 1987), breast cancer (Cooper, & Faragher, 1991), and chronic fatigue syndrome (Gratzner, Hermann, Steinbach, & DeHerrera, 1991). The concept of stress, however, is broad. It was originally adapted from engineering by pioneer stress researchers Hans Selye and Walter Cannon in the 1930s (Carroll, 1992; W. Smith, 1987). Stress, in engineering terms, is "the force on a resisting body that may or may not operate within normative limits" (Wheaton, 1994, p. 80). This engineering definition was first applied by Selye to explain the physiological changes observed in laboratory animals placed in stress induced situations. He latter redefined stress as "the nonspecific response of the body to any demand" (Selye, 1980, p. 127).

Selye's definition and approach to stress, however, was primarily a physiological one (Singer & Davidson, 1986), and many stress researchers such as Coyne and Lazarus (1980) rejected it as too limiting. They felt that the simple stimulus-response approach to understanding the effects of stress on humans failed to take into consideration the cognitive element, or "how the person appraises what is being experienced" (p. 145). When the cognitive element is added, stress can be defined as "the outcome of interactions between the organism and the environment" (Singer & Davidson, 1986, p. 48). Stress, however, is a complicated process, involving both physiological as well as psychological responses. Stress, therefore will be defined as "the process through which organisms respond to internal or external stimuli that are perceived as threatening or dangerous" (Lester, Nebel, & Baum, 1994, p. 292).

Stress, and its measurement, can occur at three levels; the physiological, psychological, and social (Trumbull & Appley, 1986; Frese, 1986). It can also be broken out into three categories, or types of stress; chronic, life events, and daily hassles (Wheaton, 1994). Chronic stress involves situations in which the stressor, defined as "any environmental perturbation that disrupts homeostasis" (Sapolsky, 1987, p. 346), is constant and of indeterminate length (Wheaton, 1994). Examples of chronic stress include the birth of and caring for a handicapped child, or a long-term illness. Life events, in contrast, are shorter in duration and do come to an end (Wheaton, 1994; Monroe & McQuaid, 1994; Dohrenwend, 1986). Life events include such things as divorce or starting a new job.

Daily hassles, like chronic stressors, are of indeterminate length, but unlike chronic stressors consist of relatively minor events. Daily hassles are the "irritating, frustrating, distressing demands and troubled relationships that plague (people) day in and day out" (Lazarus & DeLongis, 1983, p. 247). They include such things as getting stuck in traffic jams, grocery shopping, and caring for a pet (Wheaton, 1994). Daily hassles are micro-level stressors (Wheaton, 1994), and as such may act as event mediators, meaning that they may intensify life event or chronic stressors by interfering with a person's coping process (Kanner, Coyne, Schaefer, & Lazarus, 1981).

There have, however, been some criticisms leveled at the overly-broad terms used to measure daily hassles (Wheaton, 1994), but daily hassles have been found to be significantly correlated with somatic illness (DeLongis, Coyne, Dakof, Folkman, Lazarus, 1982), as well as being instrumental in predicting adaptational outcomes in regards to psychological symptoms (Kanner et al., 1981).

## Moods

Moods, like emotions, are affective states, but unlike emotions moods are longer in duration and generally less intense (W. Morris & Schnurr, 1989; Thayer, 1989). A mood can be defined as "an intervening variable or predispositional factor that is a source of information, or discriminable stimuli to the organism, about the current functioning characteristics of the organism" (Nowlis as cited in Nowlis & Nowlis, 1956, p. 352). Simply put, a mood is how a person "feels." Moods have the ability to influence a person's "affective, cognitive, and behavioral responses to a wide array of objects and events" (W. Morris & Schnurr, 1989, p. 2), yet research into moods has been plagued by numerous problems, including methodological questions. The creation of mood-states in subjects, for example, cannot be totally separated from other external stimuli or the existing mood-state of the subject.

There are no recognized theories of mood. Mood is generally explained using theories of emotion. W. Morris and Schnurr (1989) identify two theories of emotion that are relevant, in their view, to moods. One of these theories is what they term the cognitive theory. This theory holds that moods are created when an event is not of sufficient importance, or valence, to interrupt a person's ongoing activity, meaning that because a person is not cognitively aware of a stimuli he or she will experience a mood-state. The other theory of emotions identified by W. Morris and Schnurr (1989) are the cognitive-arousal theories. These theories hold that if a person is aroused, and unable to account for his or her arousal, that he or she will look to any environmental cue to explain his or her state. If unable to do so, a mood-state will result. Many people, researchers have noted, are hard pressed to identify the source or cause of their mood-states (W. Morris & Reilly, 1987).

Because moods have a wide range of effects on how a person interacts with his or her environment, many people try to self-regulate their moods. These self-regulatory methods have been grouped by W. Morris and Schnurr (1989) into four classifications. These are self-reward, the use of alcohol, distraction, and the management of expressive behavior. Self-reward is when a person uses a reinforcer to maintain, or change a mood-state. If a person, for example, is in a negative mood-state, that person may turn to a positive reinforcer such as eating or shopping to alleviate it. The use of alcohol, in contrast, is an attempt to directly eliminate a negative mood-state by altering the person's conscious state.

Distraction is also used to alleviate negative mood-states. This is when a person tries to interrupt his or her negative mood-state by becoming engaged in other activities. Distraction is differentiated from self-reward in that the activity does not have a positive reinforcing element. Watching television, for example, is a distraction technique. Finally there is the management of expressive behavior. This is when a person in a negative mood-state tries to alleviate it by assuming behavioral and / or physical attributes associated with a positive mood-state. A person, for example, may assume a pleasant demeanor and smile in an attempt to overcome a negative mood-state (W. Morris & Schnurr, 1989).

## Affect-Dependent Stimulus Arrangement, or Mood Management Theory

Zillmann's (1988a) affect-dependent stimulus arrangement theory seeks to explain why and how people use the media they do. People, according to his theory, actively, frequently, and habitually seek out media content to obtain desirable results. The theory holds that "affect and mood are strongly influenced by stimulus environments, that these environments can be controlled, and that media presentations of any kind constitute artificial stimulus environments that are (a) easily controlled by individuals, and (b) more readily manipulated for purposes of mood management than alternative environments" (pp. 147-148).

Mood management theory is based on two premises. First, individuals are motivated to relieve anxious states or moods and avoid negative stimuli, and second, individuals are motivated to prolong pleasurable states or moods and the stimuli that produce them. This theory also assumes that individuals are capable of selecting environmental stimuli to achieve these states. Zillmann (1988a) explains his theory by examining the various stages individuals progress through to achieve optimal affects.

First, individuals experience environmental stimuli randomly. They learn, through what Zillmann (1988a) calls operant learning, which environmental stimuli produce pleasurable moods and which produce unpleasant ones. Individuals then associate these environmental stimuli with those particular moods that they were experiencing at that particular time. Individuals then attempt to recreate these environmental stimuli when attempting to reproduce a desirable mood. This can be done either actively or passively. Individuals, for example, are actively seeking mood alteration when they take a vacation, but are passively seeking mood alternation when they watch television because the environments, or more precisely the images of the environments, are brought to them. Next Zillmann examined the role of media entertainment in his mood management theory.

The theory posits that individuals, when exposed to a particular form of entertainment will, through operant learning, associate that particular form of entertainment with the affect and mood they were experiencing at that particular time. An individual, for example, may associate a particular song with romance and a pleasurable mood because he or she heard it while on a pleasant date. This individual, when in a bad mood at a later time, may seek out this particular song to reexperience the mood state he or she was in at the time he or she first heard it. The individual may or may not be aware of why this particular entertainment stimulus affects his or her mood. Mood management theory assumes that all entertainment stimuli are capable of relieving bad moods, or enhancing good ones (Zillmann, 1988a).

Individuals in an anxious mood-state will, according to Zillmann's (1988a) mood management theory, seek out stimuli that are calming, whereas individuals in an under-stimulated, or bored mood, will seek excitational stimuli. Individuals, to avoid anxious moods, will chose stimuli that interfere with, or interrupt their cognition of the anxiety producing stimuli. Conversely, individuals will seek stimuli that enhances their pleasant moods, or avoid all other stimuli that might interfere with the mood-state they are in. Mood-states can also be altered by intervening stimuli, but to be effective they must not be associated with the individuals' current situation. If the intervening stimuli are associated with the individuals' current situation, then the intervening stimuli's full emotional impact are diminished (Zillmann, 1988a).

Zillmann (1988a) next establishes that particular types of entertainment produce particular types of mood-altering effects with regularity, citing numerous studies done in this area. These effects, however, are not message dependent but message type, or genre dependent (Zillmann, 1988b; Zillmann & Bryant, 1985). A genre can be defined as "patterns/forms/styles/structures which transcend individual films (and videos) and which supervise both their construction by the film-maker (and videographer), and their reading by an audience" (Ryall, as cited in Abercrombie, 1996). Zillmann (1988a) notes that entertainment genres have been categorized according to their effects on the mood-states of an individual. Nature films, defined as "films that emphasize the grandeur of creation (without showing predation and the like)" (Zillmann, 1988a, p. 153), for example, are considered to be non-arousing. Entertainment genres such as drama and comedy, however, are considered moderately arousing, whereas fear-evoking drama, pornography and sporting events are considered highly arousing (Zillmann, 1988a).

These various message genres have different mood-altering characteristics. Zillmann (1988a) found, for example, that to reduce an individual's aggressive or angry mood, the most effective entertainment stimuli, not previously associated with the environmental condition the individual is currently experiencing, were those absent in anger, provocation, and retribution. Negative moods, such as anxiety, are also capable of being altered through the use of entertainment stimuli. Individuals, Zillmann (1988a) found, can reduce their anxious states through the use of non-arousing, calming entertainment stimuli that are both highly involving and highly pleasant.

## Television and Stress Reduction

Kubey (1986), in his study on television use and everyday life, notes that many of the studies he reviewed on television viewing found that people used television as a coping strategy to alter their mood-states. Respondents to various surveys on television use throughout the years have consistently reported using television as a means of relaxation (Pearlin, 1959; R. Bower, 1973; Roper, 1987), or as a way to relieve depression (Gallup & Castelli, 1989). This has lead some researchers to compare television use to drug use (Kubey, 1996). The use of television as a coping strategy, however, has many researchers wondering if television has therapeutic applications. The majority of research into this question has been conducted by communication and psychology scholars, but there have been several studies done by health care professionals. All of these studies have found that television does have the capacity to affect mood-states.

Tan and Tan (1986) for example, in their study on television use and mental health, believe that people "recognize ... (the) therapeutic potential of television," yet conclude that very little is known "about the possible therapeutic uses of television, as in the alleviation of negative mental states or simply as a facilitator of 'good' mental health" (p. 106). Jeffers, Ostman and Atkinson (1979), doing an earlier study related to the topic of mental health, and dealing with television use in a mental hospital, also noted that "a sample of New York State Psychiatric Center directors believe that television viewing has some potential for being incorporated into therapeutic procedures in mental hospitals" (p. 126). Lowery and DeFleur (1995) note that there is strong evidence that television has therapeutic value for mental, as well as all other types of patients, but that more "research remains to be undertaken" (p. 366). Helregel and Weaver (1989), in their research on television use and pregnant women, go beyond the psychological and conclude that "it would appear that exploration of the pain or discomfort mediating potential of mass media entertainment fare warrants further investigation" (p. 30.) Anderson, Collins, Schmitt, and Jacobvits (1996), in their review and reanalysis of date collected by R. Smith (1986) as part of his look at television addiction, concluded that television viewing "may be an appropriate and positive coping strategy to temporarily reduce stress and anxiety" (p. 257).

## Medical Studies Related to Mood Management

Television has been found by communication researchers to be used by people to affect mood changes, but does this mood-altering affect of television extend beyond the home or laboratory? Can television be used by health care providers in a clinical setting to help their patients reduce their stress levels? These were the questions that several health care professionals were interested in. These heath care professionals designed and conducted a wide variety of studies examining the possible use of television by patients as a way to help reduce stress. These studies ranged from the use of television in a doctor's office performing medical examinations, to the use of television by coronary care patients. The results of all the studies indicate that television does have the ability to help patients reduce their stress levels, and that television does have a therapeutic application.

Burn injuries, according to Kelley, Jarvie, Middlebrook, McNeer, and Drabman (1984), are one of the most common and serious types of traumas among children. Burned children face extreme pain throughout treatment, and because of accepted medical treatment procedures, pain medication or sedatives are rarely given to patients. This presents both a dilemma and a challenge to those health care professionals responsible for the care and treatment of burned children. Kelley et al. (1984) explored the use of television during a burned child's treatment session as a possible way to minimize the child's pain. This use of television consisted of allowing the child to watch cartoons while the health care professionals removed the child's old bandages, treated the burned areas, then finished by applying new bandages. They found that the children participating in the study showed a decrease in the manifestations of pain during treatment, and that the children enjoyed watching the cartoons. It was concluded, however, that television was only one of several other methods used by Kelley et al. (1984) to reduce discomfort.

Stevenson, French, Tenckhoff, Maeda, Wright, and Zamberlin (1990) also conducted a study dealing with children undergoing medical treatment. They were interested in the possible use of television as an alternative to sedation in children under-going a cardiac ultrasound. The researchers noted that because of the delicacy and invasive nature of the procedure, any unnecessary movement by the child produces poor results. They also noted that although sedation is an effective way of immobilizing a child, it is "time consuming and is not acceptable to all patients and parents" (p. 488). They designed a study involving thirty-eight children who were allowed to watch a video tape while the cardiac ultrasound was performed. The researchers found a "remarkably high degree of success" (p. 490), and as a result the children were less disruptive on the laboratory staff, the parents appeared to be grateful for the avoidance of sedation, and the physical state of the children nearly matched that created by sedation alone. Stevenson et al. (1990) recommended that television use should be considered during cardiac ultrasounds.

Rickert, Kozlowski, Warren, Hendon, & Davis (1994) were also interested in developing methods to reduce patient discomfort during medical treatment procedures, more specifically gynecological examinations. They began their study by noting that sexually transmitted diseases (STDs) are increasing among young females and that these women, when testing positive for a STD, must undergo a more invasive examination known as a colposcopy. Colposcopic examinations are administered to all patients who have returned abnormal cervical smears, including those with STDs. This procedure, although not considered extremely painful, is associated with high levels of anxiety, embarrassment, and physical discomfort. Three sets of patients were randomly selected for Rickert et al.'s study. One set of patients was used as the control group and received the standard examination.

The other two sets were the test groups. One test group was allowed to watch the examination on a monitor while it was in progress. The other test group, however, was allowed to watch music videos during the procedure. Patients allowed to watch music videos demonstrated significantly fewer body movements indicative of discomfort, needed fewer reassurances from the health care providers, and required fewer explanations of the procedure. The underlying reasons for this result, however, were not explored. Instead the researchers simply attributed the calming effect of television to visual distraction.

Stahl (1981) took a different approach when exploring the use of television in a medical setting. She was interested in the use of television by patients in a coronary care unit as a way to reduce stress. Stahl's subjects were those individuals who were admitted into the coronary care unit for a variety of conditions, ranging from angina pectoris, or chest pains, to myocardial infraction, or heart attacks. She reasoned that television use by the patients could be used as a coping mechanism for several reasons. One reason was that some patients may use television to screen out unwanted distractions such as the noise from the monitoring equipment. Another reason was that television may, according to Stahl, be a normal part of the patient's outside environment, and that its absence alone could increase the patient's stress levels. Stahl found that television did indeed reduce the stress levels of her subjects, and that television significantly decreased the heart rate of those patients who had suffered heart attacks, something which Stahl called beneficial.

There are two other medical studies, although involving film, are unique in that they demonstrate that nature documentaries are capable of reducing stress hormones. They also did not rely on direct observation and / or self-reports to study the stress levels of their subjects, but on the direct measurement of the stress hormones themselves. The first study measured 17-hydroxycorticosteroid (17-OHCS) levels in the plasma and urine (Wadeson, Mason, Hamburg, & Handlon, 1963), and the other measured catecholamines levels in the urine (Levi, 1965). Both studies first measured the base stress hormone levels of their subjects, then exposed them to nature documentaries, after which stress hormone levels were measured again. Both studies found that stress hormone levels dropped significantly below base line levels.

These medical studies, along with the communication studies, have all produced results generally supporting the mood-altering and stress reduction capabilities of television. The majority of the communication studies, however, have been conducted in artificial environments and have used college students as their subjects. This raises the question of the generalizability of their findings. The medical studies avoid these problems.

The medical researchers were also not generally interested in the underlying psychological reasons for television's mood-altering capabilities. The Rickert et al. (1994) study, for example, called television a "distractor," while the Kelly et al. (1984) study considered television as merely part of an operant conditioning experiment. It must be noted, however, that it would be extremely unwarranted and presumptuous to expect health care professionals studying the physiological causes and symptoms of stress to be aware of, or even interested in, the various communication and psychological theories dealing with television and mood-management. Their work, however, is invaluable in showing the possible, and practical, therapeutic application of television.

Psychologists, on the other hand, are interested in the mental aspect of stress. Salmon (1992), for example, notes that stress associated hormones increase dramatically in patients admitted to a hospital for surgery, and that even the levels in normal study volunteers increases. Going to the hospital poses a psychological threat, and this threat causes dramatic changes in the endocrine system. Salmon examines some of the psychological issues involving surgery patients, and how stress can interfere with recovery. He also examines some psychological techniques that might be used to reduce a patient's stress level, but calls for further research. Salmon calls on future researchers "to identify the psychological procedures that can improve patients' subjective state, without compromising their physiological state" (p. 698).

Zillmann (1991), like Salmon (1992), is also a psychologist interested in finding psychological techniques to reduce stress, and has concentrated most of his research efforts on television. Zillmann notes that there are many activities that a person can engage in to relieve stress, but that comparisons between them have not been made. He states, however, that "the evidence at hand is sufficient to project the enormous potential for stress alleviation from exposure to various types of television content - from exposure to entertainment fare, in particular" (p. 107). That is the purpose of this exploratory study. To build upon the results of these various studies in order to explore the therapeutic use of television as a tool to reduce a patient's stress levels.

## Research Hypothesis and Questions

It is apparent from the research reviewed that television may have a therapeutic effect. It can reduce stress. Therefore, it is hypothesized that:

### Research Hypothesis

$H_1$. The viewing of a nature video will reduce the stress levels of outpatients waiting to undergo routine medical procedures.

A nature video, as defined earlier, is a video that emphasizes the natural beauty of gardens. Outpatients are those persons in a medical setting who are waiting to see a physician or other health care providers for routine medical procedures.

Research Questions

This field experiment testing the stress reduction capabilities of television also raises several questions. These are:

Q. 1. Is there a relationship between affinity for television and the reduction in the outpatients' stress levels?

Q. 2. Is there a relationship between the enjoyment levels of the nature video and a reduction in the outpatients' stress levels?

Q. 3. Is there a gender difference in the reduction of stress levels after viewing the nature video?

These are important questions because they may raise several other issues that relate directly to the therapeutic application of television. It may be, for example, that if there is a gender difference in the reduction of stress, this difference needs to be taken into account when conducting future research.

## Methodology

This study was conducted at a small, rural hospital located in West-central Illinois. All necessary permission was obtained from the Southern Illinois University at Carbondale (SIUC) Human Subjects Committee, and hospital administrators before the study was conducted. The study was a field experiment consisting of a pre-test, exposure to a nature video, and a post-test. The participants (N=15), all volunteers, were outpatients coming in for routine medical proceedures such as x-rays and mammograms. Even though these procedures are routine, it was assumed that the outpatients would be under stress since, as Salmon (1992) noted, even the stress hormone levels of healthy volunteers increases when they enter a hospital.

The participants were first contacted and recruited by the hospital's patient registration nurses. The author was unable to recruit participants directly because of patient confidentiality concerns. The registration nurses, when calling the patients to remind them of their appointments, asked them if they would agree to participate in this study. The registration nurses read from a prepared script provided by the researcher to ensure consistency.

When the participants came in to the hospital for their appointments, and had completed the necessary registration paperwork, the registration nurses called the researcher. The participants were then greeted by the researcher and escorted to a room a few feet away from the patient registration area. The room was a small office and contained three desks, of which one was completely empty. The room also contained a television and VCR. The television and VCR were placed on a small table which stood approximately four feet high. The table was adjacent to the empty desk, and the television set was at the approximate eye-level height of a person sitting at the desk.

Once the participants had been escorted to the room, they were invited to sit at the empty desk. The researcher then explained, in general terms, the nature of the study. The participants were also given a letter on Department of Radio and Television letterhead reaffirming what was told to them, who to call in case they had any questions, and all required SIUC Human Subjects Committee information.

After the participants had received both the oral and written explanation, they were administered the pre-test. The pre-test contained three sections, with the third section asking only for demographic data. The first section dealt with television use and affinity, and was adapted from the questionnaire used by Rubin (1983) in his study on television viewing motivation.

The second section consisted of the State-Trait Anxiety Inventory (STAI). This instrument is designed to measure anxiety, and is used primarily to detect any changes in the anxiety mood-states of subjects. The STAI has been in use for over thirty years and has been judged to be highly reliable. It also has the desirable characteristic of measuring a subject's anxiety level at a particular moment in time (Spielberger, 1972), and has been used by other researchers conducting experimental studies into the therapeutic applications of television (Rickert et al., 1994).

Once the participants had completed the pre-test, they were shown the nature video. The video itself was about Japanese gardens and was fifteen minutes long. The video only contained scenes of the various plants and wildlife found within the gardens, and no people. There were, however, voice-overs. These consisted of English translation or comments made about the meaning of Japanese gardens given by Japanese religious practitioners and artisans.

After the participants had been shown the video they were given the post-test. This post-test consisted of two sections. The first section dealt with affinity for the video, and was an original construction. The second section was another STAI instrument, identical to the one used in the pre-test. While the participants were engaged in filling out the pre-test, viewing the video, and filling out the post-test, the researcher sat at another desk in the room and tried not to distract them. Once the participants had completed the post-test, the researcher thanked them, told them when and where they could obtain copies of the results, and escorted them back to the patient registration area.

## Results

### Demographics

There were a total of 15 outpatients (N=15) who participated in this study. This group consisted of ten females (66%) and five males (33%), with a mean age of 66 years. All of the participants were Caucasian-American, and nearly two-thirds (73%) were married.

The rest of the group's demographic information is listed in Table 1.

Table 1
Demographics

| Variable | Characteristic of Participants | |
|---|---|---|
| Age | Number | Percent |
| 0-60 | 4 | 26 |
| 61-80 | 9 | 60 |
| 81+ | 1 | 6 |
| No Response | 1 | 6 |
| Grade Level Completed | | |
| High School or Less | 10 | 67 |
| College or Professional | 4 | 27 |
| No Response | 1 | 6 |
| Income | | |
| $0-$25,000 | 7 | 47 |
| $25,001-$55,000 | 4 | 27 |
| $55,001-$85,000 | 2 | 13 |
| No Response | 1 | 6 |
| | N=15 | 100% |

The first section of the pre-test dealt with television use, and began with an open-ended question about what types of programs they most liked, and what they liked about television in general. The responses were almost evenly divided between news and information (30%), entertainment (30%), and relaxation (20%). The participants were then asked how many hours a day, on average, they watched television. The mean average for all participants was 3.6 hours. When this was broken out by gender, female participants' mean average television viewing hours per day was 3.5, and the males' was 3.2 hours of daily viewing. There was no statistically significant difference between the genders in television viewing hours per day.

The participants were then asked a number of other questions regarding the types of television programs they liked, what types of media they used to relax at the end of the day, and how often they rented videotapes. Movies, for the majority of the participants (46%), were the most liked type of program, and well over half of them (60%) reported that television was what they did to relax at the end of the day. Although 33 percent of the participants indicated they did not rent video tapes, 20 percent indicated that they rented at least one tape a week. The rest of the results are found in Table 2.

Table 2

Television Program Preference, Relaxation Activities, and Video Tape Rentals

| Variable | Males | Females | Program Type Total | Percent of N=15 |
|---|---|---|---|---|
| Type of Program | | | | |
| Movies | 2 | 5 | 7 | 46 |
| News | 2 | 3 | 5 | 33 |
| Police Dramas | 1 | 3 | 4 | 26 |
| Talk | 1 | 3 | 4 | 26 |
| Medical Dramas | 0 | 3 | 3 | 20 |
| Soap Operas | 1 | 2 | 3 | 20 |
| Law Dramas | 1 | 1 | 2 | 14 |
| Sports | 1 | 1 | 2 | 14 |
| Music | 1 | 0 | 1 | 6 |
| Relaxation Activity | | | Activity Type Total | |
| Watch TV | 4 | 5 | 9 | 60 |
| Read a Book | 0 | 4 | 4 | 26 |
| Read a Newspaper | 0 | 4 | 4 | 26 |
| Listen to Radio | 0 | 3 | 3 | 20 |
| Other | 1 | 2 | 3 | 20 |
| Watch Videos | 1 | 1 | 2 | 13 |
| Read a Magazine | 0 | 1 | 1 | 6 |
| How Often Rent Tapes | | | Video Rental Activity | |
| Never | | | 5 | 33 |
| Once a Week | | | 3 | 20 |
| Once Every 3 Months | | | 3 | 20 |
| Once a Year | | | 2 | 13 |
| Once a Month | | | 1 | 6 |
| Once Every 6 Months | | | 1 | 6 |

The second section of the pre-test dealt with affinity for television, and was adapted from Rubin's (1983) study on television viewing motivations. This reliable affinity index measures "the perceived importance of television in the lives of the respondents" (p. 43). It is a five-point scale, with one being strongly agree and five being strongly disagree. The five affinity index variables are: I would rather watch TV than do anything else; I could easily do without TV for several days; If the TV wasn't working I would not miss it; Watching TV is one of the most important things I do each day; I would feel lost without TV to watch. The majority (60%) of the participants in this study demonstrated little affinity for television; see Table 3.

Table 3
Affinity for Television

| Variable | Strongly Agree to Agree | Strongly Disagree to Disagree | No Opinion | M* |
|---|---|---|---|---|
| Rather Watch TV | 4 | 10 | 2 | 2.2 |
| Do Without | 8 | 5 | 1 | 3 |
| Not Miss It | 1 | 4 | 1 | 3.1 |
| Most Important | 0 | 9 | 4 | 2.4 |
| Lost Without It | 0 | 8 | 1 | 2.5 |

* 5-point Likert scale

## Testing the Hypothesis

The main purpose of this field experiment was to test the main hypothesis:

> $H_1$. The viewing of a nature video will reduce the stress levels of outpatients waiting to undergo routine medical procedures.

To test this hypothesis it was first necessary to measure the stress levels of the participants before and after viewing the nature video using the same instrument in both conditions. The instrument used was the State-Trait Anxiety Index (STAI), and as discussed earlier it has been in use for over thirty years and has been found to be reliable. The instrument itself consisted of 20 variables; ten dealing with stress and ten with non-stress. These two sets of variables were grouped together to create separate indexes; one containing only the stress variables and the other only the non-stress variables. The stress index consisted of the following variables: I am tense; I am regretful; I feel upset; I am presently worrying over possible misfortunes; I feel anxious; I feel nervous; I am jittery; I feel "high strung"; I am worried; I feel over-excited and "rattled" The non-stress index consisted of the following variables: I feel calm; I feel secure; I feel at ease; I feel rested; I feel comfortable; I feel self-confident; I am relaxed; I feel content; I feel joyful; I feel pleasant

It was determined that the stress and non-stress related variables should be placed in separate indexes because the stress levels of the participants were the primary focus of this field experiment. Once these indexes were created, reliability alpha coefficients were calculated for both. The stress index had an alpha reliability coefficient of .974, and the non-stress index had an alpha reliability coefficients of .891.

The 20 variables were measured using a Likert scale, with the responses being: No Opinion; Not at All; Somewhat; Moderately So; Very Much So. The STAI instrument is an interval scale design, and an appropriate type of statistical test to use in analyzing the data it generates is the Paired-Samples t-test. The Paired-Samples t-test is used when a group of participants are administered the same instrument before, then after exposure to a treatment; in this case a nature video. The differences between the pre-test and post-test are then "compared to determine whether a statistically significant difference exists between (them)" (Wimmer & Dominick, 1994, p. 243). This comparison was made using the SPSS 6.1 statistical analysis program's Paired-Samples t-Test. This test "computes Student's t statistic for testing the significance of a difference in means for paired samples"(SPSS, 1994, p. 175).

Paired-Sample t-tests were conducted for both the non-stress, as well as the stress indexes to examine whether there was a significant change in the participants' stress levels. The results of the non-stress index Paired-Samples t-test produced no significance. This means that the participants did not become calmer after watching the nature video. The results of the stress index Paired-Samples t-test, however, did produce a significant result ($t(14) = 1.07$, $p < .05$). The results of this 2-tailed t-test are present in Table 4.

Table 4
t-Tests for Group Paired Samples

| Variable | M | SD | SE of M |
|---|---|---|---|
| Stress Levels Pre-Test | 2.3000 | .786 | .203 |
| Stress Levels Post-Test | 2.1067 | .784 | .202 |

Paired Differences

| M | SD | SE of M | t-value | df | 2-tail Sig. |
|---|---|---|---|---|---|
| .1933 | .345 | .089 | 2.17 | 14 | .048 |

95% CI (.002, .385)

The results of this Paired-Samples t-test demonstrated support for the main hypothesis:

$H_1$. The viewing of a nature video will reduce the stress levels of outpatients waiting to undergo routine medical procedures.

Research Question 1

After the main hypothesis had been tested, the research questions were then addressed. The first research question was:

Q. 1. Is there a relationship between affinity for television and the reduction in the outpatients' stress levels?

A correlation test was performed in order to determine if there was a relationship between affinity for television and the reduction in the participants' stress levels. Correlation tests, according to Wimmer and Dominick (1994), are used to determine if a relationship exists between two variables; in this case affinity for television and reduction in stress. The results of the correlation test were significant ($r$=.53, $N$=15, $p$=.04).

### Research Question 2

The next research question was:

Q. 2. Is there a relationship between the enjoyment levels of the nature video and a reduction in the outpatients' stress levels?

Correlation tests were again performed to see if there was a relationship between affinity for the nature video and the reduction in the participants' stress levels. The results of this correlation test produced no significant results. There was no correlation between affinity for the nature video and the reduction in the participants' stress levels.

### Research Question 3

The final research question was:

Q. 3. Is there a gender difference in the reduction of stress levels after viewing the nature video?

The pre and post-test stress index results of the females and males were examined separately to determine if there was a gender difference in their response to the nature video. A Paired-Samples $t$-test was performed on each set of indexes; one for the females and another for the males. The results of the male's stress index Paired-Samples $t$-test produced no significance. The results of the female's stress index Paired-Samples $t$-test, however, did ($t$ (9)=1.58, $p$ < .05). The results of this 2-tailed $t$-test are presented in Table 5.

Table 5

t-Test for Female Paired Samples

| Variable | M | SD | SE of M |
|---|---|---|---|
| Stress Levels Pre-Test | 2.04 | .617 | .195 |
| Stress Levels Post-Test | 1.82 | .489 | .155 |

Paired Differences

| M | SD | SE of M | t-value | df | 2-tail Sig. |
|---|---|---|---|---|---|
| .2200 | .220 | .070 | 3.16 | 9 | .012 |

95% CI (.063, .377)

The results of this Paired-Samples t-test demonstrate that there was a significant gender difference in the stress reduction ability of the nature video. The females' response to the nature video, as measured by a reduction in their stress levels, was much greater than that of the males. It should be noted that the stress levels of the male participants (M=2.86) was higher than the female participants (M=2.04) in the pre-test condition. The stress levels for both the male (M=2.7) and female (M=1.82) participants were lower in the post-test condition, but the difference between the two gender groups did not appear significant. The small number of male (N=5) participants, however, may have influenced significance.

## Conclusion and Discussion

The results of this field experiment demonstrate support for the main hypothesis that watching a nature video can reduce the stress levels of outpatients. This finding has important implications. Going to a health care facility, for many people, is a stressful event. The results of the field experiment demonstrate that certain types of television programs, such as a nature video, do have therapeutic applications. Researchers have demonstrated that stress not only has a negative impact on a person's physical and psychological health, but it is also cumulative. Any reduction in a person's stress level is beneficial. The medical studies reviewed earlier have concluded that television has a therapeutic application, a conclusion that is supported by the results of this field experiment. There was, however, an unexpected finding; females demonstrated a much stronger reduction in their stress levels than the males.

The difference between the male and female responses to the video has several possible explanations. First, this difference in stress reduction levels could be gender-related. A majority of the mood-management studies reviewed reported that men tended to prefer television programs that contain action such as sports, while the majority of women tended to prefer less frenetic television programs such as situation comedies. The nature video used in this field experiment contained no action. It only contained images of gardens, running water, and wildlife, and moved at a slow pace. This may not have been appealing for the male participants. They may have, in effect, found the nature video to be boring. It would be interesting to find out if a nature video containing more action would reduce both the male's and the female's stress levels.

A cultural explanation for the difference in the stress reduction levels of the females and males may have been the nature video's topic; Japanese gardens. A majority of the male participants had served in World War II and may have developed a life-long dislike for the Japanese. One of the male participants, for example, told the researcher that he had served in the Pacific during the war, and that he thought the nature video espoused non-Christian ideals and that he was offended by it. This field experiment was conducted in a small rural hospital located in the heart of Illinois. There may be a cultural bias against anything that is non-American. This possible cultural bias needs to be explored further. This can be accomplished by replicating this field experiment using a nature video focusing on American wildlife or wild places.

Finally, another possible explanation for the difference in the stress reduction levels between the females and the males may be psychological. Some of the mood-management studies reviewed explored the program preferences of women going through various stages of pregnancy and menses. They found that women demonstrated different program type preferences depending on the physiological stages they were going through. It was speculated by the researchers that this was caused by the varying hormone levels of their female participants. Although the majority of the female participants in this study were probably beyond their child-bearing years, they may have developed a preference for non-arousing types of television programs during this time, and the preference remained even after their child-bearing years had passed.

The other significant finding of this field experiment was that a correlation existed between affinity for television and stress reduction. This result supports the observation that television has become such an accepted medium that even if people state that they do not to like it, television still captures and holds their attention.

The overall results of this field experiment demonstrate that television does have a therapeutic application in that it does reduce the stress levels of outpatients. There are, however, some factors that must be considered when examining the results. This field experiment was conducted in a hospital using outpatient participants. This meant that the researcher was unable to recruit participants directly because of confidentiality concerns of the hospital administrators. All participant recruiting was done by the registration nurses, rather than the researcher. Even though the nurses were provided a prepared script from which to read, this still introduces some uncertainty as to what was actually told to the participants.

Another limitation that must be considered is the nature and size of the sample. This field experiment was designed to test the therapeutic application of television among actual outpatients in a clinical setting. This meant that the sample generated was purposive and small, even though this field experiment was conducted over a four-day period. These types of limitations are routinely faced by researchers doing studies related to medical topics and using patients as participants. They are simply unavoidable.

The results of this field experiment, however, did demonstrate that television does indeed have a therapeutic application. This field experiment also points out several areas that need to be explored further. One of these was discussed earlier, and involves the type of video used. Another area for future researcher involves age. Does age effect the stress reduction capability of a video? The majority of participants in this study were senior citizens, and this possible age effect could not be addressed. Finally, does the therapeutic use of television have a wider application, meaning can it be used to help other types of patients other than outpatients to reduce their stress levels? These are important questions, and ones that should be addressed. This thesis was only a small, but significant step in that direction.

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# A Path Model Examining the Influence of the Media on Fear of Crime and Protective Act

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# ABSTRACT

In an effort to understand how the media influence people's fear of crime, this paper proposed and empirically tested a model of the relationship between (1) demographic variables and crime issue involvement; (2) simple exposure to the media, exposure to crime news and crime information seeking; (3) attention to crime content; and (4) fear of crime and taking protective acts against crime. Data from a survey of 311 adult residents of Little Rock, Arkansas provided preliminary partial support for the developed hypothesis.

# A Path Model Examining the Influence of the Media On Fear of Crime and Protective Act

The Summer of 1993 witnessed several highly publicized shootings, prompting Time reporter Jill Smolowe to characterize it as "a season in hell," one in which "an epidemic of shooting sprees in malls, McDonald's restaurants and movie theaters has fostered the perception that no place is safe anymore" (Smolowe, 1993). Indeed, Time reported that sale of anti-theft and other safety devices were booming, and that 61 percent of those surveyed thought crime in this country was getting worse-a figure that jumped to 89 percent in 1995 (Shannon, 1995). Buried in this story about the crime wave of 1993 was a paragraph noting that overall crime rates were decreasing, not increasing. The crime wave of 1993 reflected perceptions of crime among those on the police beat rather than actual occurrences of crime on the street.

Several researchers have found that media coverage of crime does not reflect actual crime rates (Davis, 1952; Antunes & Hurley, 1977; Jaehnig et al., 1981; Sheley & Ashkins, 1981; Fedler & Jordan, 1982; Windhauser et al., 1990; Jerin & Fields, 1994), and that the media's obsession with crime news may increase fear of crime in their audience (Einsiedel et al., 1984; O'Keefe & Reid-Nash, 1987; Williams & Dickinson, 1993). However, few studies have tried to discover the links between media coverage, fear of crime and people's decisions to take acts to protect themselves.

## THE MODEL

This study seeks to clarify the media's role in influencing public perceptions about crime and the influence of these perceptions on people's lifestyles. More specifically, this study will test a cognitive model of the influence of the media on people's perception of crime and on protective behavior. This model asserts that involvement with crime, as measured by the belief that the individual or someone close to him or her will be affected by crime, leads to greater exposure to crime content in the media and greater information seeking of crime reports from the media. This, in turn, leads to greater attention to media reports of crime. Greater attention to crime content, in turn, leads to greater fear of crime, which leads to taking protective acts against crime. Thus, the relationship between crime involvement and the dependent variables is mediated by the media use variables, and the link between the two media exposure measures and information seeking and the dependent variables is mediated by attention to crime content.

Past studies have largely focused on whether the media influence people's fear of crime and efforts to protect themselves. This is one of the first studies to use a model to test how the media influence people's fears of crime. Also, unlike most earlier studies that only examine the effects of heavy television viewing on crime attitudes and behaviors, this study will employ four media use measures: frequency of media use, frequency of reading or hearing about crime news, attention to crime news and information seeking of crime news. Finally, while most media crime studies only examine television use, this study will also include newspapers, magazines and radio.

Figure 1 About Here

## Exogenous Variable

### Demographics

Studies have traditionally found that women (Biderman, et. al, 1967; Ennis, 1967; Conklin, 1975, Garofalo, 1977a; Skogan & Maxfield, 1981; Warr, 1984, LaGrange & Ferraro, 1989), older individuals (Conklin, 1975; Garofalo, 1977b; Hindelang et al., 1978), racial and ethnic minorities, those of low education and income as well as urban residents (Biderman, et al 1967; Garofalo, 1977; Stinchcombe et al., 1977; Houts & Kassab, 1997) are the most fearful of crime even though, paradoxically, women and the elderly have the lowest rates of victimization

(Baumer, 1978; Miethe, 1995; Ferraro, 1995). For instance, Skogan and Maxfield (1981) found that women were almost 3.5 times more likely than men to report feeling very unsafe if alone on their neighborhood streets at night. City residents more than 60 years old were almost six times more likely than those under 21 to report being afraid, and persons with a family income less than $6,000 were more than twice as likely as those with an income more than $25,000 to express these feelings. Researchers speculate that fear among women and the elderly is high because they feel more physically vulnerable than men or the young (Stinchcombe et al., 1977; Hindelang et al., 1978; Skogan & Maxfield, 1981; Miethe & Lee, 1984). Also, women's fear of crime might hinge on their fear of being raped which may occur with a multitude of crimes (Hindelang, et al, 1978; Warr, 1984; Stanko, 1995; Ferraro, 1996). Fear among racial minorities and the poor may be higher because they are more likely to live in neighborhoods where crime is prevalent (Conklin, 1975; Baumer, 1978).

However, several recent studies have challenged earlier presumptions about crime rates among certain groups as well as their levels of fear. Researchers note that actual crime rates might be higher for women and the elderly than researchers assume (Pain, 1995; Stanko, 1995) as many crimes against women, particularly sexual violence, are underreported. Also, women and the elderly might not be as fearful as some studies indicate (Pain, 1997; Ferraro, 1995). Finally, fear of crime may be more a function of where you live than personal characteristics. Indeed, whites living in black or integrated neighborhoods reported a greater fear of crime than blacks (Liska, Lawrence, & Sanchirico, 1982; Covington & Taylor, 1991; Skogan, 1995).

## Issue Involvement

Roser (1990) claims that researchers have increasingly included measures of involvement in effects studies because level of involvement determines whether the audience selects and actively processes information or passively allows messages to wash over them. However, she notes that researchers strongly disagree about what involvement is, when it happens and whether it heightens or diminishes attitude change. Involvement has been defined as the individual's connection to an issue prior to exposure (Grunig, 1982; Petty & Cacioppo, 1986), a state of activation during exposure (Cohen, 1983) or the processing that results from exposure (Batra & Ray, 1985). Finally, involvement involves cognitive, affective and behavioral components (Roser, 1990; Lo, 1994), and different forms of involvement have different effects (Chaffee & Roser, 1986).

This study takes its cues from Grunig and Childer (1988) and Petty and Cacioppo (1979), who have defined issue involvement in terms of perceived future consequences of the issue for the individual. Specifically, this study will measure issue involvement in terms of the degree to which the respondent believes crime will affect them or someone close to them, which crime researchers label as perceived risk of victimization. Similarly, like Grunig and Petty and Cacioppo, this study treats issue involvement as an individual's connection to an issue prior to media exposure, and hypothesizes that issue involvement will be related both to media use and to crime attitudes and behaviors.

Studies suggest that those individuals who are highly involved with a topic process information more deeply (Batra & Ray 1985; Chaffee & Roser, 1986; Roser, 1990 ). This may be particularly true for newspaper use (Lo, 1994). For instance, Petty and Cacioppo's elaboration likelihood model posits that greater issue involvement increases the probability that an individual should consider, weight and judge persuasive arguments carefully (Petty & Cacioppo, 1979, 1986). Similarly, Batra and Ray (1985) claim that a "learning hierarchy," in which knowledge gain leads to attitude change and then to behavioral change, should occur only when psychological involvement is high and information is readily available. Roser (1990) found that perceived relevance of a message related directly to message processing, attitudes about heart disease and intentions to change behaviors.

Therefore, studies suggest that issue involvement should be linked to crime attitudes and behaviors and to the media use measures; indeed attention to a message may be a necessary component of involvement (Roser, 1990).

Past crime studies typically used perceived risk of victimization as the dependent variable and consider this measure as synonymous with fear of crime. However, several scholars argue that fear of crime and perceived victimization are distinct concepts. Cognitive judgments of perceived risks of crime lead to affective feelings of fear and therefore perceived risk should be used as an independent variable and fear of crime as a dependent one. Indeed, several studies have found that perceived risk of crime leads to increased fear of crime (Warr and Stafford, 1983; Ferraro & LaGrange, 1987; Ferraro, 1995; Ferraro, 1996).

A few recent cultivation studies have employed involvement measures, but they operationalize involvement in terms of message rather than issue involvement. For instance, Shrum (1995), drawing upon the ideas of Petty and Cacioppo, argues that deeper information processing of television messages occurs when message involvement is high and time pressures are low. This, then, may be one of the first studies of media use and crime behaviors that has employed involvement as the exogenous variable rather than as a dependent variable.

## Intervening Variables

### Crime Information Seeking

Cultivation researchers typically treat the audience members as passive receptors of information (Gerbner & Gross, 1976). However, more recently, researchers have returned to the notion of an active audience and level of activity is often thought of as a variable that is measured or manipulated (Chaffee & Roser, 1986). Level of activity, then, is used to predict what types of effects might occur as a consequence of media exposure (Levy & Windahl, 1984).

Information seeking has been conceptualized by researchers in several forms such as a need for information (Atkin, 1973), a need for cognition (Cacioppo & Petty, 1982); gratifications sought (Blumler & Katz, 1974), a need for orientation (Weaver, 1980) and selective exposure (Stempel, 1961). This study will use Clarke and Kline's (1974, p. 233) definition of information seeking as "planned scanning of the environment for messages about a specific topic."

Recent cultivation scholars have criticized the notion that the audience passively receives information and have proposed models that conceptualized the audience as actively selecting and interpreting information from the media (Rouner, 1984; Potter, 1993; Tapper, 1995). Cultivation studies examining the use of VCRs (DuBrow 1990) and cable television (Perse et al., 1994) demonstrate that these new communication technologies allow the viewer actively to select certain types of content. Similarly, researchers working outside the cultivation framework appear to presume that the audience members actively search out crime information from the media as well as from friends and family (Tyler, 1980; Skogan & Maxfield, 1981).

This may be the first study that specifically tests the relationship between active seeking of crime information from the media and fear of crime.

## Exposure to crime news

While researchers agree that the public is exposed to a large volume of crime news and crime shows through the media (Dominick, 1973; Roshier, 1973; Sherizen, 1978; Garofalo, 1981; Graber, 1980; Lotz, 1991; Ericson et al., 1991), they have debated how media exposure should be measured (Troldahl, 1965; McDonald, 1990). The debate over how media use should be measured is not just one of semantics; studies have found different effects of the media depending on how media use is measured (McLeod & McDonald, 1985; Chaffee & Schleuder, 1986; Martinelli & Chaffee, 1995; Zhao & Bleske, 1995).

Most media effects studies have used simple exposure as their media measure, even though simple exposure may be the weakest predictor of media effects (Chaffee & Schleuder, 1986). Similarly, most studies examining the effects of the media on crime attitudes, particularly cultivation analysis, have used heavy television exposure as their media measure. Several of these cultivation studies found that heavy exposure to television cultivates a fear in people for their personal safety (Gerbner & Gross, 1976; Gerbner et al., 1977, 1978; Barille, 1984; Potter, 1991), although correlations were typically weak. However, several other cultivation studies using more extensive measures as well as controls either found no relationship (Sacco, 1982; Hughes, 1980; Hirsch, 1980, 1981; Perse et al., 1987), or found that the relationship between heavy use and fear of violence only holds for certain groups, such as those who live in high crime neighborhoods (Doob & MacDonald, 1979). Heath and Gilbert (1996) claim that factors such as the type of programming (e.g., crime drama versus news), the location of the crime, the credulity level of the viewer, the extent of justice displayed at the program's end, and the level of apprehension of crime before viewing all affect whether television increases fear of crime.

Research suggests that exposure to particular content, such as news, is a stronger predictor of media effects than simple exposure. For instance, McLeod and McDonald (1985) found that exposure to public affairs content explained a greater percentage of the variance in political attitudes than simple exposure. Others have refined the concept of content exposure further, arguing that exposure should be measured in terms of the audience's perceptions about the amount of information about an issue obtained from a mass medium (Atwood, 1991; Salomon & Cohen, 1978).

Potter (1993) has criticized cultivation researchers for relying on general television viewing as the measure of media effects, noting that the underlying assumptions of cultivation scholars that the media send uniform messages and that the viewer is nonselective may have held true during the days of network dominance, but cannot be supported in the age of VCR ownership and the explosion of cable channels. He advocated that exposure to specific content be included as media effects measures. Indeed, he found that exposure to specific types of shows better predicted fear of crime than general television exposure (Potter, 1990; Potter & Chang, 1990) with crime news being negatively related to fear of crime (Potter & Chang, 1990). Other studies have also found that exposure to specific types of show is a stronger predictor of cultivation effects than general TV viewing (Hawkins & Pingree, 1981; O'Keefe, 1984).

However, studies specifically examining how viewing television news influences crime attitudes has offered conflicting evidence. O'Keefe (1984) and Chiricos, Eschholz and Gertz (1997) found that television news viewing is correlated with fear of crime attitudes, but other studies have found no relationship (Skogan & Maxfield, 1981; Tyler 1980). In fact, Doob and MacDonald (1979) discovered that overall television viewing was more strongly related to fear of crime victimization than was television news viewing.

Research on the relationship between newspaper use and fear of crime is even more muddled. Reading crime news in newspapers has been linked in several studies to fear of crime (Williams & Dickinson, 1993; Einsiedel et al., 1984; Gordon & Heath, 1981; Liska & Baccaglini, 1990; Gebotys et al., 1988). However, Chiricos, Eschholz and Gertz (1997), Tyler (1980), and Skogan and Maxfield (1981) found no relationship, and Doob and MacDonald

(1979) discovered that reading crime news was negatively correlated with fear of victimization in high-crime areas. O'Keefe and Reid-Nash (1987) found newspaper readership did not increase fear of crime, although those who were already concerned about protecting themselves were more likely to turn to newspapers. Two studies indicate that while newspaper stories about local crimes may increase fear of crime, newspaper coverage of crime in other cities might make people feel safe by comparison (Liska & Baccaglini, 1990; Heath, 1984). Finally, studies indicate that newspaper reports of local crimes portrayed in a sensational or random manner and given prominent coverage are most likely to provoke fear in their audience (Heath & Gilbert, 1996).

Past studies have offered conflicting evidence about the relationship between both simple exposure and content exposure and fear of crime. Studies have not even conclusively shown which measure is more strongly linked to crime attitudes. Therefore, this study will include general measures of media exposure as well as exposure to crime content in its model. For the crime content variable, this study will adopt Atwood's (1991) approach of examining audience perceptions of the amount of information about crime obtained from the mass media.

### Attention to Crime News

Several studies have suggested that media scholars use attention paid to communication messages in addition to frequency of exposure, particularly for television. As Chaffee and Schleuder (1986) note, one can watch television because it is on without paying particular attention to it. Therefore, attention may more adequately measure the effects of television viewing on political attitudes. Indeed, several studies discovered that attention to media content more strongly predicts attitudes and knowledge than simple exposure. For instance, while several television studies suggest that television exposure is negatively correlated with knowledge (Becker & Whitney, 1980; Patterson & McClure, 1976) or is unrelated to that variable (Chaffee & Schleuder, 1986), studies of television news attention have found that television contributes to political knowledge (Leshner & McKean, 1997; Chaffee & Frank, 1996; Martinelli & Chaffee, 1995; Weaver & Drew, 1995; Chaffee, Zhao, & Leshner, 1994; Chaffee & Schleuder, 1986).

Crime studies that have included attention measures in addition to exposure ones have typically found stronger links between the media and fear of crime. For instance, while O'Keefe (1984) found no connection between overall television exposure and fear of victimization, attention to televised crime news was significantly related to feeling less safe alone in one's neighborhood at night, worrying about being burglarized and worrying about being a victim of personal assault. O'Keefe and Reid-Nash (1987) found similar results.

## Dependent Variables

### Fear of Crime

Researchers contend that because few people have directly experienced crime, fear of crime should logically be shaped by second-hand impressions gained through the media and through personal conversations (Garofalo, 1981; Skogan & Maxfield, 1981, Chermak, 1995). However, while conversations with others, particularly discussions about personal crimes and about victims like themselves, can magnify fears about crime (Skogan & Maxfield, 1981), results for the influence of media have been mixed. As noted earlier, some studies have discovered effects (Gordon & Heath, 1981; Gerbner & Gross, 1976; Gerbner et al., 1977, 1978; Barille, 1984; Potter, 1991, Williams & Dickinson, 1993 ; Einsiedel et al., 1984) while others have either not found relationships (Tyler, 1980; Skogan & Maxfield, 1981; Sacco, 1982; Hughes, 1980;

Hirsch, 1980, 1981; Perse et al, 1987), or found that a relationship existed only under certain circumstances (Doob & McDonald, 1979).

Methodological factors may account for the weak link between the media and fear of crime. Research suggests that both media use and fear of crime have been inadequately measured in past studies. As noted earlier, most of these studies use a single measure--heavy television use--to examine the link between media and the fear of crime. When O'Keefe (1984) used a more powerful media measure, attention to the media, he found stronger connections between the media and crime.

Furthermore, research suggests fear of crime measures employed in most studies (e.g., how likely is it that the individual will be involved in crime, do they feel safe to walk at night in their neighborhood) actually assess estimates of personal safety and perceived risk rather than fear of crime. While fear of crime and perceived risk are strongly related they are distinct concepts. A person may judge his or her risk of crime to be high, but still not be afraid (Ferraro, 1995). When researchers asked respondents to indicate their level of fear for 16 specific crimes, they discovered that television exposure was linked to fear of crime; television use wasn't linked to the traditional personal safety and perceived risk measures (Sparks & Ogles, 1990; Ogles & Sparks, 1993). Similarly, researchers suggest the relationships between demographics and fear of crime may differ depending on how fear of crime is measured. For instance, while older individuals may report higher fears of crime in general, younger individuals are more likely to report fear of specific crimes such as burglary, rape, murder, and assault (Ferraro & LaGrange, 1988; LaGrange & Ferraro, 1987; Ferraro, 1995). Also, while women might perceive themselves as being at greater risk of becoming a crime victim, they are no more likely than men to express fear of certain crimes such as burglary (Rountree & Land, 1996).

## Protective Acts

Logically, those who have a greater fear of crime would be more likely to take efforts to protect themselves. Indeed, Ferraro (1995) found that perceived risk of crimes led to taking protective acts which, in turn, led to greater fear of crime. However, other studies have found only mixed support for the premise that fear leads to protective acts (Tyler & Lavrakas, 1985; DuBow, 1979), although studies do indicate that city residents habitually do simple, routine things such as staying at home after dark, avoiding places they perceive as dangerous, walking in groups, and avoiding public transportation that may have the effect of reducing their chances of being victimized (DuBow, 1979). Skogan and Maxfield (1981) suggest that both opportunities and constraints can intervene in the relationship between fear of crime and taking precautionary actions. They note, for instance, that some people must go to dangerous places or go out at dangerous times because of work or social demands. Nevertheless, the authors did discover that fear of crime and feelings of personal vulnerability shaped people's behaviors toward crime.

While several studies have examined the relationship between media use and fear of crime, few studies have extended their work to look at the link between media use and taking protective actions against crime. Those studies that have included such indicators have found that the relationship between media use and attitudes and behavior toward crime are similar. For instance, Skogan and Maxfield (1981) found no relationship between the media and efforts to take protective acts just as they found no relationship between media use and fear of crime. O'Keefe and Reid-Nash (1987) did find that newspaper readership was more strongly linked to concern about taking protective acts than it was to fear of crime, but suggested increased knowledge and concern about crime was linked to seeking out information in the newspaper rather than vice versa. Attention to television news, however, did lead to concern for taking protective acts.

### Hypothesis of the Study

H1: Fear of crime and protection acts against crime are functions of (a) crime involvement and demographic characteristics (b) crime information seeking and crime message exposure, and (c) attention to crime news.

## METHOD

### The Sample

Telephone interviews with 311 adults living in the greater metropolitan area of Little Rock, Arkansas were conducted in April 1994, a time when the problem of crime and violence were receiving considerable attention in national and local news media. The survey was conducted by trained undergraduate students enrolled in an advanced undergraduate research method for the social sciences course. The sample was drawn from local exchanges using random digit dialing procedures.

Demographically, only about 40% of the respondents were men and 60% were women. In terms of age, the respondents' age ranged between 18 and 91 years with a mean of 43 and a mode of 47 years. Forty percent of the respondents attained a high school certificate or less, 42% finished college, 8% completed a master's degree, 8% had a professional or Doctoral degree and 2% refused to answer the question.

### Operational Definitions of Constructs

Crime issue involvement was defined as a topic with perceived future consequences for the individual and/or a close person. The measured indicators of the construct were borrowed from Grunig and Childers (1988). Respondents were asked: To what extent do you believe crime and violence will (a) affect you personally, either now or in the near future, and (b) someone close to you?

Crime information seeking was defined as an individual's intentional search for information about crime on the mass media. Respondents were asked: Which media do you search for stories about crime in Little Rock? I look for crime stories (a) in newspapers, (b) local television news, (c) national television news, (d) magazines, and (e) radio news.

Crime message exposure was defined as an individual's perceptions of the amount of information on crime and violence in Little Rock over the media. The items which operationalize the construct were adapted from Atwood (1991): How much have read or heard about crime and violence in Little Rock within the last month or so in (a) newspapers, (b) from television, (c) from radio, and (d) in magazines?

Crime attention measures were adapted from McLeod and McDonald (1985). Respondents were asked: Suppose you come across a story or something about crime and violence tomorrow, compared with other stories you usually read or watch, how much attention would you pay to the story about crime in (a) newspapers, (b) television, (c) magazines, and (d) radio?

Fear of crime index was developed by asking respondents of their concern for being victims of murder, rape, assault, robbery and burglary.

Protection acts was defined as specific actions individuals have taken to protect themselves against potential crime in the future. The measured indicators of the construct included attending workshops on crime, taking self-defense training, buying burglar alarm systems, buying mace, and purchasing weapons.

Active information seeking of crime stories and actions people have taken to protect themselves from being victims of crime were coded as Yes (1) and No (0). The constructs of crime involvement, crime message exposure, and crime attention were coded as A great deal (5), Quite a bit (4), Some (3), A little (2), and Nothing at all (1). The measured indicators of fear of crime were also acquired on a five point scale of strongly agree (5) to strongly disagree (1).

The questionnaire included measures of several demographic variables of which some were used to assess the representativeness of the sample and as control variables. The control variables were education, race, income, gender and age. All demographic variables, with the exception of gender, were measured by standard self-report questions. Gender was recorded by the interviewers.

### Analysis

The data were analyzed in three stages. First, a confirmatory factor analysis of all the measured indicators of the model was run to assess the relative performance of each indicator on its respective theoretical construct. Secondly, correlations of the demographic variables with the dependent variables--fear of crime and protection acts against crime--were calculated. Finally, Seven indices were created by summing the values of the indicators of each construct of the model. A path model regression analysis was used to test the causal links of the model by running equations that included all hypothesized paths between the variables. Other possible links between the variables were also tested.

## RESULTS

The results of the factor analysis suggested that the measured indicators assessed the constructs of the model fairly well with a total coefficient of determination for the variables of 0.911. Newspaper and local television loaded the most strongly on the crime news measures. The demographic variables, however, did not correlate with the dependent variables well. Only education and age correlated with protection acts (.18) and (-.18) respectively. Moreover, none of the demographic variables predicted fear of crime or protection acts of crime in the regression models.

Table 1 About Here

An examination of the solution is largely determined by assessing the estimates of the hypothesized relations of the model which are presented as the direct effects, indirect and total effects of the estimated path coefficients. The path coefficients, as direct effects for all the paths in the tested model, are presented in Figure 2. It was hypothesized that all estimated coefficients are significantly different from zero at the 0.05 level. All the standardized estimates for the model, including indirect and total effects among the variables, are presented in Table 2. To summarize the findings of the model, the article adopted the form of presentation suggested by Alwin and Hauser (1981). The calculation of the total effects of the model was accomplished by multiplying all the estimated indirect effects leading to a variable.

We hypothesized seven causal links and a host of links between the demographic characteristics and media use variables. Our hypothesis that attention to crime news leads to fear of crime did not receive support unlike research that suggests that attention is more strongly related to fear of crime than exposure measures (O'Keefe, 1984; O'Keefe & Nash, 1987). Moreover, only two demographic variables correlated with media use variables. White respondents were less likely to report receiving a lot of information on crime from the media (-.13), while the less educated were more likely to spend more time with the media (.20).

Table 2 About Here

As indicated in Figure 2, the results support the remaining six causal relations in that crime issue involvement influenced crime news exposure (.17), general measure of media exposure (.13) and information seeking of crime news from the media (.12). Both crime information seeking (.24) and exposure to crime news (.35) predicted attention to crime news while the general measure of media exposure did not predict attention to crime news. Exposure to crime news (.20) and crime issue involvement (.37) predicted fear of crime and protection acts was influenced by fear of crime (.20), and attention to crime news (.14).

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Figure 2 About Here
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The influence of news media on fear of crime and the influence of those perceptions on people's behaviors to protect themselves from being victims of crime are moderate at best according to the model specification. However, some select total effects are noticeably above average and both theoretically substantive as well as bear major policy implications. The use of the various exposure measures provided different perspectives on their influence on attention to media content.

## CONCLUSION

The objectives of the study were to investigate the news media's role in influencing the public's perceptions on crime and the influence of those perceptions on people's lifestyle. The model suggested causal links among crime issue involvement, crime information seeking, simple exposure, crime news exposure, attention to crime news, fear of crime, and protection behaviors against crime.

That crime issue involvement leads to crime news exposure and crime information seeking is clear. Simple exposure to the media also increases the chances that people attend to crime news as well as seek crime news from the media. Moreover, individuals exposed to crime

87

news and those seeking crime news are more likely to pay attention to crime news than those who randomly encounter crime news. Fear of crime is greatly influenced by both exposure to crime news and crime issue involvement. The relationship between crime issue involvement and fear of crime, though not hypothesized, should not be considered unexpected as other studies have found that estimation of perceived risk influenced fear of crime (Warr & Stafford, 1983; Ferraro & LaGrange, 1987; Ferraro, 1995; Ferraro, 1996). Both attention to crime news and fear of crime influence people's likelihood to take steps that have the potential to protect them from becoming victims of crime.

Past literature has been divided on whether or not the media influence attitudes about fear of crime. This study found little evidence that the media directly influenced attitudes about fear of crime. Not only was the relationship between attention and fear of crime nonsignificant, initial testing of the model indicated that simple exposure and crime information seeking weren't directly related to fear of crime. Our findings are similar to results of other studies (Skogan & Maxfield, 1981; Tyler, 1980) that tested models of media influence on crime attitudes and found little media influence or that media use variables influenced only fear of specific crimes rather than all types of crime (Ogles & Sparks, 1993; Sparks & Ogles, 1990). Demographic variables also were not linked to fear of crime which supports recent studies that have found few relationships between fear of crime and demographic measures (Pain, 1997; Ferraro, 1995).

Most past studies of the influence of the media on fear of crime have focused on heavy television viewing. Based on confirmatory factor analysis of the indicators of each construct in the model, the study suggests that newspaper use had consistently stronger factor loadings than television use and thus should be included in future studies. Although the factor loadings of simple exposure to magazine and radio are noticeably low, they were substantive and statistically significant which also warrants their inclusion in future studies. Also past studies did not give a clear answer as to whether television or newspaper use was stronger predictor of fear of crime. This study suggests that newspaper is a better predictor than television. But most importantly, the inclusion of the various media use variables in future studies could highlight important media effects in other media effects studies.

The public's perception about crime is apparently over-inflated. For instance, Time's report of an increase in sales of anti-theft and other safety devices, and the increase from 61 percent of those surveyed to 89 percent within two years that crime in this country was getting worse (Shannon, 1995) contradicted the realities of crime in the nation. Not surprisingly, both liberal and conservative politicians, at the state and national levels, capitalized on that perception by trading legislative gains and losses on the thorny issue of gun control (Shannon, 1995). At the state level, the public's perceptions about crime sparked a rash of legislation on licensing concealed weapons. Currently, about half the states passed legislation to make carrying concealed weapons lenient, while over a dozen states are reviewing their status on gun control.

While our study did not find that media use had a great influence on fear of crime, past studies have suggested that media coverage does not reflect actual crime rates. The media tend to underplay petty, nonviolent and white-collar crimes while overemphasizing sensational, unusual and violent crimes (Davis, 1952; Antunes & Hurley, 1977; Jaehnig et al., 1990; Sheley & Askins, 1981; Fedler & Jordan, 1982; Windhauser et al., 1990; Jerin & Fields, 1994; Johnson, Braima & Sothirajah, 1997). Therefore, the media could do more to reduce the perception that crime rates are rising. If the mass media are going to play a role in dispelling the erroneous perception that a wave of crime is on the rise, then it appears that media practitioners ought to be advised to try new models of reportage of crime in national and local media to avoid undue panic among the public in the near future. Suggestions to improve the media's crime coverage include but are not limited to: 1) media practitioners ought to attempt to put reportage of violence and crime in a broader context as a social problem by providing the root causes of crime and violence; 2) they should not emphasize crime in the newscast by avoiding reporting crime at the beginning of the newscast and reducing the amount of time given to trivial crime news; 3) to engage the youth in reducing crime, media practitioners can promote community events that get young people involved and show positive stories about youth who have turned away from crime; 4) the media can also provide coverage of the activities of community alert centers which have been successful in reducing violence and crime in their respective communities; 5) the media need to de-emphasize violent crimes reporting and stress their frequency; and 6) the media need to be careful not to treat several unrelated crimes as evidence of a crime wave.

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Table 1
Standardized Factor Loadings of Constructs of the Model

| Measured Indicators | Issue Invol | Simple Expo. | Crime Expo. | Information Seeking | Crime Attention | Crime Fear | Protectn Acts |
|---|---|---|---|---|---|---|---|
| Personal Involv. | .95 | | | | | | |
| Relative's Involv. | .80 | | | | | | |
| Newspapers | | .53 | | | | | |
| Magazines | | .18 | | | | | |
| Local TV | | .46 | | | | | |
| Radio | | .18 | | | | | |
| Newspapers | | | .70 | | | | |
| Magazines | | | .26 | | | | |
| Local TV | | | .58 | | | | |
| Radio | | | .31 | | | | |
| Newspapers | | | | .85 | | | |
| Magazines | | | | .27 | | | |
| Local TV | | | | .71 | | | |
| Radio | | | | .21 | | | |
| Newspapers | | | | | .85 | | |
| Magazines | | | | | .41 | | |
| Local TV | | | | | .59 | | |
| Radio | | | | | .38 | | |
| Fear of Robbery | | | | | | .95 | |
| Fear of Assault | | | | | | .85 | |
| Fear of Burglary | | | | | | .80 | |
| Fear of Rape | | | | | | .55 | |
| Fear of Murder | | | | | | .53 | |
| Purchase of Mace | | | | | | | .59 |
| Purchase of Weapon | | | | | | | .47 |
| Taking Course on Crime Protection | | | | | | | .39 |
| Purchase of House Alarm | | | | | | | .34 |
| Attending Workshop | | | | | | | .18 |

Table 2
Interpretation of Effects* in the Model

| Dependent Variable | Predetermined Variable | Direct Effects | Indirect Effects | Total Effects |
|---|---|---|---|---|
| Crime News | Involvement | .17 | .06 | .23 |
| | Race** | -.13 | | .13 |
| Simple Exposure | Involvement | .13 | | .13 |
| | Education | .20 | | .20 |
| Information Seeking | Involvement | .12 | .04 | .16 |
| Crime Attention | Involvement | | .06 | .06 |
| | Race | | -.05 | -.05 |
| | Crime News | .35 | | .35 |
| | Information Seeking | .24 | | .24 |
| Fear of Crime | Involvement | | .03 | .03 |
| | Race | | -.03 | -.03 |
| | Crime News | .20 | | .20 |
| Protection Acts | Involvement | | .09 | .09 |
| | Education | | .03 | .03 |
| | Race | | -.02 | -.02 |
| | Crime News | | .04 | .04 |
| | Simple Exposure | .14 | | .14 |
| | Information Seeking | | .03 | .03 |
| | Crime Attention | .14 | | .14 |
| | Fear of Crime | .20 | | .20 |

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*The effects in the model are beta weights
**Race was coded as nonwhites (0) and whites (1)

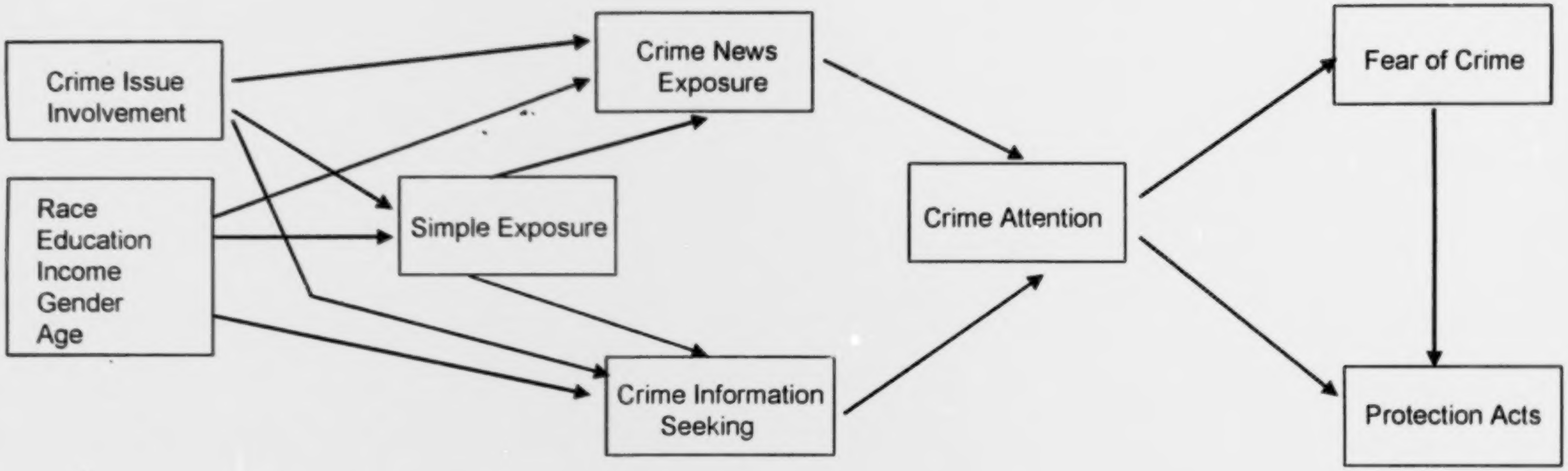
Crime Issue Involvement
Race
Education
Income
Gender
Age
Crime News Exposure
Simple Exposure
Crime Information Seeking
Crime Attention
Fear of Crime
Protection Acts

Figure 1: A cognitive Model of the Influence of the Media on People's Perception of Crime

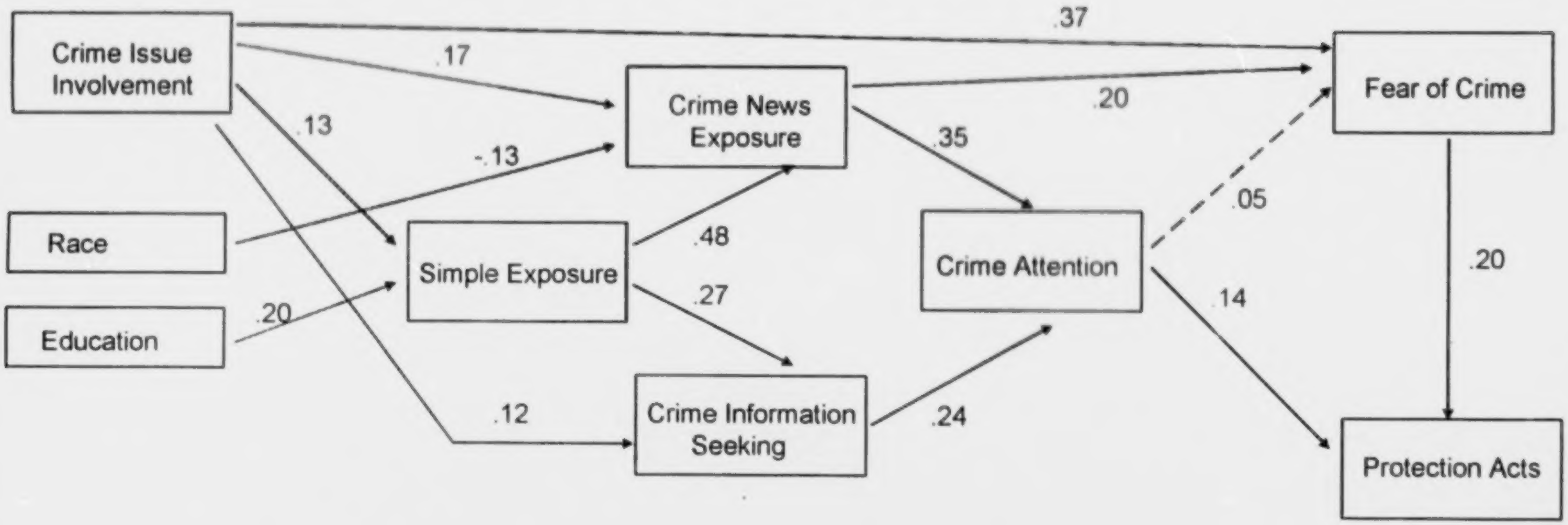
Crime Issue Involvement
.37
.17
Crime News Exposure
.20
Fear of Crime
.13
-.13
.35
.05
Race
Simple Exposure
.48
Crime Attention
.20
Education
.20
.27
.14
.12
Crime Information Seeking
.24
Protection Acts

Figure 2: The Influence of the Media on People's Perception of Crime

# *"Cognitive Innovativeness as a Predictor of Student Attitudes and Intent: An Application of the Theory of Planned Behavior to Online Learning Environments"*

By

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## Abstract

This study, using the Theory of Planned Behavior as a framework, investigates the effect of internal and external cognitive innovativeness on attitudes, beliefs, and behavioral intentions related to desire to experience an online Web-based course.

High internal and external innovators result in more positive attitudes than low internal and external innovators. Regression analysis suggests that attitude is predictive for high internal innovators, while for high cognitive innovators, attitude and norms are predictive.

Despite numerous predictions over the past several years that development of the Internet and the World Wide Web will revolutionize instruction and create a new paradigm for teaching and learning, there is still a fair amount of controversy about the viability of online learning environments. Although colleges and universities around the country currently are making, or have plans to make available a variety of online course offerings, students' attitudes toward and acceptance of computerized teaching methods are still an issue (Chronicle of Higher Education, 1998). For some students, the opportunity to take an online course is attractive because it is a convenient and novel approach to the process of education. For others, beliefs about some of the drawbacks of online education, such as the lack of structure provided by a live instructor or lack of access to a computer, may affect negatively attitudes and intent to take an online course.

One of the motivating forces that underlies formation of attitudes and beliefs with respect to adoption of new technologies is consumer innovativeness, a personality characteristic that has been explored extensively in the consumer behavior literature. Innovativeness, a construct that is derived from diffusion theory, was originally associated with the adoption and use of new technological innovations (Rogers and Shoemaker, 1971). Many consumer behavior studies have used the concept of consumer innovativeness to examine purchasing behaviors related to adoption of new products.

## Purpose of the Study

Although it has been addressed conceptually, limited research has examined the relationship between individual differences (such as innate traits) among students and their attitudes and beliefs with respect to online education. Hiltz (1987), in a study of adult learners, found that individual differences, primarily differences in learning style, affected preference for online education versus traditional teaching modes. Moore (1990), commenting on this study and others, notes that research is "not yet sufficient to draw conclusions about the extent of variations in preference for online education among the adult population at large" (p.15).

Given the parallels between consumer adoption and use of new products and students' similar ability to "adopt" and "use" (i.e., " take") an online course, the purpose of this study is to attempt to extend the concept of consumer innovativeness to the instructional setting in order to determine whether students' levels of innovativeness can be used to predict attitude and intent to enroll in an online course. Given the investment colleges and universities are currently making in online education and distance learning, it is important to have a better understanding of the factors that influence students' attitudes and behavior towards acceptance of new communication technologies, with a view towards developing message stimuli that may potentially create a more effective appeal.

## Innovativeness as a Characteristic of Personality

In its original conception, Rogers defines innovativeness as "the degree to which an individual is relatively earlier in adopting an innovation than other members of his social system" (Rogers and Shoemaker,1971, p. 27). Hirschman (1980) defines innovativeness as the desire for new experience, and traced the development of the construct to its roots in the diffusion and personality literature. According to Venkatraman (1991), consumer innovativeness can be defined as a latent personality trait that predisposes people to buy new products.

Leavitt & Walton (1974) critique the results of several previous diffusion studies on the basis of smaller-than-expected variance in the dependent variable of adoption. Calling personality variables the "soft underbelly" of the problem, they postulate that a trait might exist that would underlie rational media choice behaviors. The researchers argue that the many psychological studies of close-mindedness, dogmatism, rigidity, etc., can be counterbalanced by an attempt to scale a new open-minded, constructive trait they call "innovativeness." The subsequent Leavitt & Walton innovativeness scale later was tested for predictive validity by Craig & Ginter (1975) who concluded that not all components of the original scale discriminated between innovators and non-innovators.

Along these same lines, Midgley and Dowling (1978) reconceptualize the adoption-of-behavior approach as less a measure of time than a personality construct that an individual could possess to a greater or lesser degree. According to Midgley and Dowling, innovativeness is "the degree to which an individual is receptive to new ideas and makes innovative decisions independently of the communicated experience of others" (p 236). As such, the construct is closely related to novelty seeking (Flavell, 1977), and to creativity, especially productive thinking and problem solving (Welsh, 1975; Guilford, 1965).

Although innovativeness is measured as a singular trait in the original diffusion formulation, consumer innovativeness has also been viewed as having more than one dimension. An example of this is Price and Ridgeway's conceptualization of a three tiered hierarchy of innovativeness, which differentiates between innovativeness as an innate trait and as an observed behavior. Drawing on Alpert's (1937, 1961) notion of the hierarchical nature of traits (cardinal, central, secondary) Price & Ridgeway's model views innovativeness as an inherent central trait, and proposes a set of innate secondary traits or tendencies that underlie observable behaviors.

## A Multi-dimensional Model of Innovativeness

Some researchers have attempted to relate innovativeness to the internal need for stimulation. They argue that when stimulation, diversely categorized as complexity, arousal, enjoyment, risk, etc., falls below a certain level, individuals will seek out stimulation through behaviors such as exploration, variety seeking, and novelty seeking (Price and Ridgeway, 1985). Drawing on the work of cognitive researchers, including Caccioppo and Petty (1982) and Hirschman (1984) as well as the novelty seeking literature exemplified by Pearson (1970), Zuckerman (1979) and Faison (1977), Venkatraman and Price (1990) attempt to differentiate cognitive and sensory traits that predispose individuals to seek stimulation of the mind, which they defined as cognitive innovativeness, versus seeking stimulation of the senses (sensory innovativeness). Adapting Pearson's Novelty Experiencing Scale (NES), Zuckerman's Sensation Seeking Scale and Hirschman's Cognition Seeking Scale, Venkatraman and Price (1990) are able to fit a hierarchical second order factor model based on a multi-dimensional structure of innovativeness. (See Fig. 1 below.)

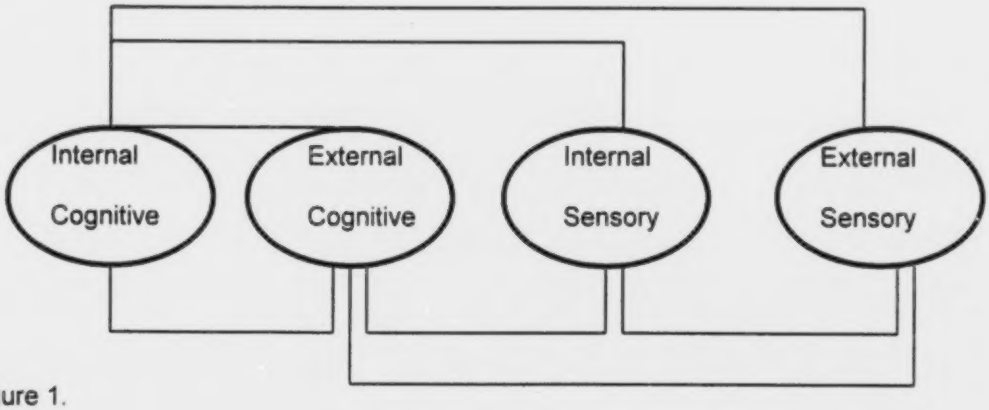

Figure 1.

Second Order Factor Model of Innovativeness

In this model, cognitive and sensory dimensions form the higher-order factors, and each of these is comprised of internal and external dimensions. Conceptual definitions of these lower order factors, adapted from Pearson's 1970 study, clarified internal cognitive innovativeness as the "tendency to like unusual cognitive processes that are focused on explanatory principles and cognitive schemes"; while external cognitive innovativeness is the "tendency to like finding out facts, how things work and learning to do new things." Internal sensory innovativeness, on the other hand, is the "tendency to like experiencing unusual dreams, fantasy or feelings that are internally generated"; while external sensory innovativeness is the tendency to like active physical participation in thrilling activities." In the researchers' subsequent model, they combine the internal and external factors of cognitive and sensory innovativeness and average across each to form two eight-item scales (1990).

## Theory of Planned Behavior

A seminal work in attempting to understand and predict behavior and behavioral intentions is Ajzen's theory of planned behavior (1980). This theory is the researcher's extension of the theory of easoned action (TORA). The basic proposition of both models is that in order to predict a behavior, B (such as enrolling in an online course), one must try to measure an individual's intent to behave, BI (such as intent to take an online course), itself a function of attitudes toward the target behavior and subjective norms.

In both the TORA model and the later theory of planned behavior (TOPB), attitudes are a function of beliefs about and assessments of perceived consequences of acting in a certain way, such as beliefs about the advantages or disadvantages of taking an online course. Subjective norms refer to an individual's interpretation of what important referents (people with whom the subjects identify) think about the desirability of a behavior, combined with the individual's desire and motivation to comply.

In an attempt to answer critics of the TORA, who argue that most behaviors are neither volitional (as in the initial model formulation) nor involutional, Ajzen adds an additional variable called perceived behavioral control, which measures perceptions of individual control over the target behavior. The resulting predictive equation can be written as follows:

$$B\sim BI\sim(AB+SN+PBC)=w_1AB+w_2SN+w_3PBC$$

where AB is attitude toward the behavior, SN is subjective norms, and PBC is the degree of perceived behavioral control a subject feels s/he has over the behavior. In the model, these three variables are weighted as follows:

**AB** - variables related to belief statements and evaluation of their consequences;

**SN** - variables related to normative beliefs of important referents and their effect on a subject's motivation to comply; and

**PBC** - variables related to beliefs about the control a subject has over the behavior and the power or degree of control.

The TOPB has been employed by researchers in several studies to predict students' attitude and behavioral intentions. Prislin and Kovarlija (1992) in a study of low and high self-monitoring, found that students' intentions to attend a class lecture are best predicted by attitude of the low self-monitoring group and subjective norms of the high self-monitoring groups. Crawley and Black (1992) use the model to test causal linkages among attitudes, subjective norms, and perceived behavioral control with respect to secondary science students' intentions to enroll in physics classes. The model has also been used to predict intention of tenth graders to enroll in subsequent mathematics courses (Choe, 1982) as well as to predict success in an undergraduate computer science course (Shaffer, 1990).

## Rationale for the Study and Hypotheses

This study examines the demand economy currently driving adoption of online education in colleges and universities around the country in light of its similarities with the consumer-driven marketplace. Students in this environment, much like consumer prospects, have the ability to choose to take courses and in some cases, entire degree programs that are characterized by a wide variety of delivery mechanisms and course technologies.

Given the volitional nature of the target behavior and students' expectation and experience, that taking classes is a cognitively oriented process, the researchers chose to employ the cognitive innovativeness sub-scale by itself, focusing on differentiating the internal and external factors and using these to predict attitude and intent. The rationale for this approach is based on Vankatraman and Price's work, which showed a highly significant relationship between higher education and cognitive innovativeness (F1,5.18, p< .01), but not sensory innovativeness (p. 309).

The model for this study assumes that differences between internal-cognitive innovators, who have a tendency to like unusual cognitive processes and schemes or structures that allow for higher order thinking, versus external-cognitive innovators, who like to ferret out factual information and learn to do new things, might account for differences in the target behavior as well as help predict how attitudes, subjective norms, and perceived behavioral control influence behavioral intent.

As internally cognitive people like unusual cognitive processes and cognitive schemes, a cognitively oriented stimulus should elicit a high degree of liking.

Conversely, those low in internal cognitive innovativeness receiving the control stimulus should exhibit a lower degree of liking.

To test the effect of this potential difference, a cognitively oriented stimulus, based on a detailed online course description and designed to tap into cognitive innovativeness was introduced and assigned to half of the participants, while the other half received a control stimulus.

Using this basis, the following hypotheses were derived:

*When the information contained in the course description stimulus is congruent with cognitive innovativeness (experimental stimuli), compared to when it is discrepant (control stimulus), attitude toward the target behavior should differ as follows:*

**H1)** There should be an interaction effect between the attitude scores for high and low internal and external cognitive innovators and the stimuli.

**H2)** There should be an interaction effect between the attitude scores of high internal cognitive innovators and low internal cognitive innovators with the stimuli.

**H3)** There should be an interaction effect between the attitude scores of high external cognitive innovators and low external cognitive innovators and the stimuli.

**H4)** There should be a main effect between internal and external innovators – high internal cognitive innovators should have a more positive attitude than low internal cognitive innovators, and high external innovators should have a more positive attitude than low external cognitive innovators.

Finally, in attempting to draw some inferences about which variables are the best predictors of intent to take an online course, the TOPB model was tested using intent to take an online course as outcome variable. This model takes into account potentially contributory variables to the target behavior (taking an online course), and precedent for its use has been established in other studies focusing on students' behavioral intentions.

## Methodology

### Subjects and Experimental Design

Participants in the study were college students (n=356) in three large introductory public relations and animal science writing classes at a large Southeastern university. The mean age was 20.9; average class standing was sophomore year. The study, based on a 2x2x2 factorial design, consisted of a questionnaire comprised of three elements:

1) A set of scale items measuring internal and external cognitive innovativeness;
2) A randomly assigned stimulus consisting of either a cognitively oriented written course description for an online Web-based course or a control version; and
3) A set of scale items measuring the variables in the theory of planned behavior model with intent to take an online Web-based course as the dependent target behavior variable.

At the beginning of the session, subjects were randomly assigned to one of the two (cognitive or control stimuli) experimental conditions, which were incorporated into the copy of the questionnaire each subject received. After filling out the cognitive innovator scale, the participants were then asked to read the course description and answer the rest of the items based on the description they received.

Validity stimuli was assessed prior to the study through a pre-test that asked a panel of 15 judges to match each course description to a hypothetical highly innovative student respondent, using an example of how such a student would have responded to items on the scales as part of the description of the student.

The validity and reliability of the theory of planned behavior theoretical framework, when used for the purpose of predicting behavioral intent and the conceptual rationale behind each of the variables in the model, has been extensively documented. A thorough analysis of the model and its application to predicting human behavior can be reviewed in Ajzen, 1991.

## Questionnaire Design

To measure attitude toward the behavior, subjects were asked to rate the target behavior (taking an online Web-based course) on a set of seven-point (-3, +3), Likert-type, four bipolar scales, whose anchors are good-bad; pleasant-unpleasant; harmful-beneficial; positive-negative.

Subjective norms were measured by a series of bipolar scales that rated first the referents and then motivation to comply with each referent's opinion of the respondent's engaging in the target behavior. These scales were also measured on a Likert-type seven-point scale (-3,+3).

Perceived behavioral control was examined by having students rate the degree of control they felt they had over taking an online class, as well as how difficult or easy it would be and whether or not they felt the decision to take an online class was up to them. These scales were measured on a Likert-type seven-point scale (-3,+3).

## Results

Confirmatory factor analysis was conducted on all of the variables in the study and all of the scales had a one-factor solution. The Statistical Package for Social Sciences (SPSS) 7.0 was used to conduct the analyses.

Reliability analyses for the scale items used in the instrument were measured by Chronbach's alpha and are reported as follows: Internal cognitive innovativeness ($\alpha$=.72); external cognitive innovativeness ($\alpha$=.62); attitude ($\alpha$=.91); subjective norms ($\alpha$=.98); and behavioral intention ($\alpha$=.91). Perceived behavioral control was a one-item measure for each of its components.

Hypotheses one through four were tested using ANOVAS. To conduct these tests, internal and external cognitive innovativeness scores were recoded on the basis of a median split into four groups (High Internal Cognitive; Low Internal Cognitive; High External Cognitive; Low External Cognitive)

Hypothesis one, that there should be an interaction effect between the attitude scores for high and low internal and external cognitive innovators and the stimulus, was supported at the $\alpha$=.05 level. F(7, 2.29) p = .016.

Both hypothesis two, which predicted differences in attitude between high internal cognitive innovators receiving a cognitive stimulus and low internal cognitive innovators receiving a control stimulus (H2), and hypothesis three, which predicted that attitudes would differ for high external cognitive innovators receiving a cognitive stimulus compared to low external cognitive innovators receiving the control stimulus (H3), were supported at the $\alpha$=.05 level.

Two-way interactions were observed in both cases; the High Internal group (M .458, sd 1.43) had a more positive attitude than the Low Internal group (M -1.21, sd

1.44), F(3, 3.70) p = .012. The High External group (M 5.42, sd 1.26) also had a more positive attitude than the Low External group (M -.003, sd 1.56); F(3, 4.14) p = .007.

Hypothesis four, which predicted a main effect between high and low internal and external cognitive innovators, was also supported. The main effect between the High Internal (M .486, sd 1.47) and Low Internal Cognitive (M .184, sd 1.4) and the High External Cognitive (M .583, sd 1.33) and Low External Cognitive. (M .146, sd 1.54) groups was significant at the $\alpha$=.05 level (F 3, 3.855) p = .004. (See Figure 2).

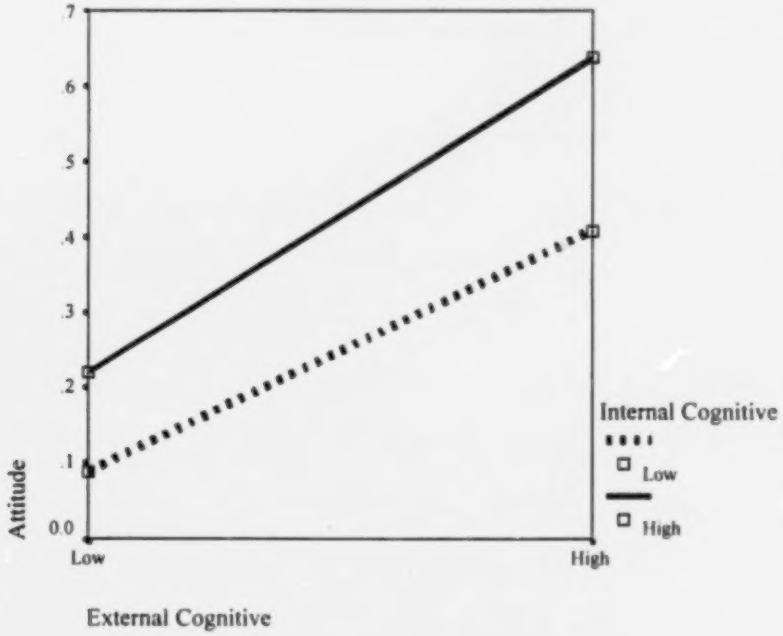

Figure 2. Attitudes toward taking an online course.

### Prediction of Behavioral Intention

To examine the relative contribution of attitudes, subjective norms, and perceived behavioral control to the prediction of behavioral intentions for high and low cognitive and sensory innovators, linear regression analyses were performed using SPSS. Testing of the TOPB model indicates that although all factors are significant contributions to behavioral intent, attitudes and perceived behavioral control are most important (Table 1).

Table 1

Prediction of Behavioral Intent to take an Online-Web Based Course

| Group/Measures | r | Beta | $R^2$ |
|---|---|---|---|
| All Subjects | | | |
| Attitudes | .81 | .72 ** | |
| Subjective Norms | .54 | .08* | |
| PBC | .41 | 09** | .667 |

* $p = .05$, ** $p < .01$

For all subjects, attitude proved to be a better predictor of behavioral intent than either perceived behavioral control or subjective norms, suggesting that intent to take an online course is a behavior perceived to be, to a great extent, under one's own control and not subject to significant influence by peers, advisers, relatives and other referents.

Regressions were then performed for high and low internal and external cognitive innovators, in an attempt to see if these factors had any influence on the outcome variable.

Table 2

Prediction of behavioral Intent for High and Low Internal and External Cognitive Innovators

| Variables | | r | Beta | $R^2$ |
|---|---|---|---|---|
| Low Internal | AB | .75* | .64** | |
| | SN | .50* | .07 | |
| | PBC | .51* | .21** | .63 |
| High Internal | AB | .84* | .78** | |
| | SN | .57* | .07 | |
| | PBC | .33* | .02 | .70 |
| Low External | AB | .80* | .73** | |
| | SN | .50* | .02 | |
| | PBC | .44* | .15** | .70 |
| High External | AB | .81* | .71** | |
| | SN | .58* | .12* | |
| | PBC | .36* | .05 | .67 |

$^{*}\underline{p} < .05$, $^{**}\underline{p} < .01$

For all groups, attitudes remained the strongest predictors of intent to take an online course. Interestingly, for high internal cognitive innovators, attitude alone was highly significant in contributing to the TOPB model, while both attitude and subjective norms were contributory for high external cognitive innovators. For both low internal and low external cognitive innovators, attitude and perceived behavioral control were important, but norms were not, suggesting that high external cognitive innovators are more concerned about what relevant referents might advise and less concerned about feelings of control or efficacy over the behavior.

## Discussion and Conclusions

Online education is a technological innovation that would seem likely to appeal most to those who have highly innovative personalities, as opposed to those who are less attracted to new experiences and novel technologies. In addition to lack of face-to-face interaction, online learning represents a major change from the traditional educational environment. In the live classroom, the instructor serves as an anchor and a source capable of providing explanation and context for a linear sequence of activities. In addition to potential unfamiliarity with the technology, students in an online course have to deal with a fair amount of ambiguity and lack of structure; the environment is less predictable and may require some ability to figure things out without benefit of experience or rules.

The differences observed between high and low internal and high and low external cognitive innovators may relate to their relative levels of tolerance for ambiguity. It seems possible that this may be one of the factors that influences people who are low in innovative tendencies to have a negative opinion about experiences involving technology. The introduction of technology may add a degree of unpredictability and ambiguity to what was formerly a relatively familiar terrain.

Conversely, highly innovative people may find the relative lack of structure and "rules" in an online course environment mentally challenging. As the literature suggests, cognitive innovators are problem solvers and thinkers; they like to figure out puzzles, problems, etc. and they are motivated to take risks and enjoy mastering the complex.

That differences were observed between the internal and external dimensions of cognitive innovativeness would suggest implications for marketing efforts aimed at attracting students to take an online course. Internal cognitive innovators seem most influenced by their attitudes and sense of control over the technology related to online environments, such as familiarity with and access to computers. Highly internal cognitive innovators seem to feel a stronger sense of control over this type of experience than low cognitive innovators; and for these students, the attraction of an unusual cognitive process is appealing in itself.

In addition to attitude, external cognitive innovators seem more influenced by situational norms than internal cognitive innovators. For this group, the feelings of peers and academic advisers may come into play more so than for other groups, because these individuals are externally oriented, yet they also tend to feel a strong sense of control over the target behavior. On the other hand, for both low internal and external cognitive innovators, attitude and perceived behavioral control are important predictors. These groups are less attracted to ambiguous and unstructured situations, this may affect their feelings of lack of control over both the technology and their own ability to function and perform well in the online course environment.

Venkatraman et al. (1990) found that cognitive innovators are more persuaded by factual ads than evaluative messages. The results of this study suggest that it also may be important to take the internal and external predispositions of cognitive innovators into account when designing messages. For high internal cognitive innovators, a message emphasizing the mentally challenging aspects of mastering a course in an unpredictable and technologically challenging environment may hold appeal, while high external cognitive innovators might respond better to an appeal that adds the support of important referents such as family, friends, and academic faculty and advisers.

Finally, for those groups low in cognitive innovativeness, it seems that lack of perceived behavioral control may be an important issue, one that might be addressed by crafting messages aimed at bolstering confidence in the level of control over the technology and the structure of the experience.

From a theoretical standpoint, this study, in keeping with the literature, supports the contention that innovativeness is not a homogenous construct, but one that can be defined according to internal and external aspects of the cognitive innovativeness trait. As results of the study show, internal and external cognitive innovators differ, not only in terms of their relative levels of innovativeness (high vs. low), but also in how the internal or external aspects of the trait may influence evaluations of behavior and behavioral intentions.

In the context of online course development and promotion, these differences have important implications for constructing course environments that appeal to cognitive tendencies. In addition, the results suggest support for the importance of both designing communication messages that tap into the internal and external dimensions of cognitive innovativeness, and attempting to reassure students concerned about normative evaluations and beliefs related to perceived behavioral control.

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# SOURCE PERCEPTION AND ELECTRODERMAL ACTIVITY

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*The Multistage Sequential Model of Face Recognition was used to hypothesize a relationship between electrodermal activity evoked by various communication sources and audience perception of those sources. Skin conductance responses (SCRs) were recorded while subjects (N = 28) watched images of 22 communication sources. Perceptions of sources were recorded via a questionnaire. Results showed that sources associated with different program genres evoked different levels of SCRs, and familiarity of sources was positively associated with the level of electrodermal activity.*

The psychological effects of communication sources have been extensively studied by scholars in communications, advertising, political communications, and psychology (for a review, see Wilson & Sherell, 1993). Much of the work on source effects has manipulated communicator characteristics to assess audience's attentional biases to communicators and their acceptance of the messages they deliver. For instance, in previous source-effects studies, message sources have typically been presented as communicators who are credible versus not-credible; physically attractive versus unattractive; or ideologically similar versus dissimilar (Wilson & Sherell, 1993). These source characteristics have been found to enhance or diminish the message potential to achieve attitude or belief changes (Chaiken, 1979; Sternthal, Phillips, & Dholakia, 1978).

However, little is known about perception of sources as a function of emotional states of receivers. It is difficult to examine source effects without considering the emotional impact of various sources on receivers, since it is well documented that audience's emotional state can influence message processing (Zajonc, 1980, 1984; Lang, Dhillon, & Dong, 1995; Lang, Newhagen, & Reeves, 1996) as well as person perception and other social judgements (Clark, Milberg, & Erber, 1984; Kenrick & Cialdini, 1977; Stangor, 1990).

The study reported here explicitly measures the emotional impact of communication sources on receivers, and examines whether there is a systematic association between receivers' states of emotion and their perception of communication sources. The emotional state examined in this study is autonomic arousal, which is one of the two most commonly derived dimensions of emotions along with the valence dimension (Greenwald, Cook, & Lang, 1989; Lang, Bradley, & Cuthbert, 1992). Specifically, this study asks the following research question: For media receivers, controlling demographics and individual physiological differences, what is the relationship between communication source perceptions and electrodermal skin conductance responses (SCRs)?

### Communication Sources and Electrodermal Activity

Viewed from a cognitive perspective, the source of communication is one of the most significant and important stimuli, because human face is such an important object in the visual world. "Not only does it establish a person's identity, but also, through its paramount role in communication, it commands our almost continuous attention" (Ellis, 1981, p. 1). As we all know, much of the content in the mass media, be it informational or entertaining, is delivered by one or more communication sources. Prior research has shown that receivers experience changes in emotional or affective states when they encounter various communicators. For example, we feel changes in arousal level at the time of viewing the sources, which in turn may affect such important cognitive processes as attention and memory (Shepherd & Ellis, 1973).

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Whether we have an innate attraction for a certain type of source or we have prior association of certain sources with important emotional events, communication sources are arousing stimuli (Shearer & Mikulka, 1996).

Electrodermal activity is commonly used as an index of attention, effort, and arousal (Bernstein, 1973; Maltzman, 1979). It is also a component of the orienting response (OR) to surprising and significant stimuli (O'Gorman, 1979). With regard to OR, there is substantial evidence that the SCR component of OR is reliably elicited by stimuli which have "signal value," or significance, for the organism (Maltzman, 1979; Tranel, Fowles, & Damasio, 1985).

Communication researchers have used several different physiological measures, including SCRs, to explore viewer's orienting responses to such structural features of television as subjective camera movement (Lombard, Reich, Campanella, & Ditton, 1995), cuts, movements, and onset of commercial messages (Reeves et al., 1985; Lang, 1990). Viewed from a psychological point of view, all these structural features of television are significant stimuli, which tend to draw immediate attention and evoke arousal from the television audience. By the same token, communication sources would be significant enough stimuli to elicit different levels of arousal in receivers.

The purpose of the current investigation is to explore the relationship between source perceptions and receiver's autonomic electrodermal responses to sources from the perspective of the facial recognition model in cognitive psychology. Considerable evidence in facial recognition studies indicates that different communication sources may elicit different levels of physiological responses. Toward this end, this paper will first introduce the facial recognition theory, review the relevant literature on this topic, and propose a set of hypotheses. It will then present the methods and results of an experiment conducted to test those hypotheses. Finally, it will discuss the findings in their appropriate theoretical and methodological context.

## A Multistage Sequential Model of Face Recognition

Several models of face processing have been developed in information-processing terms (e.g., Bauer, 1986; Bauer & Verfaellie, 1998; Bruce, 1991; Ellis, 1986). In general, these cognitive models posit that human face recognition is a function of a series of cognitive processes. In this multistage, sequential processing model, the initial stage is the *perceptual analysis* of the faces, which involves the parallel extraction of featural and configural information (Bauer & Verfaellie, 1988). It is then followed by a judgment of whether the face is familiar, and if the face is familiar, a subsequent search for "identity-specific information." This *identification* of a previously familiar face requires additional post-perceptual steps in which a memory representation of the face is activated because it matches the incoming perceptual information in some significant way. For example, Bruce and Young (1986) suggest that we develop an "identity-specific semantic code" from our previous experience with a person. Included in this code is information about the person's appearance, demeanor, occupation, family background, hobbies, personality, etc. The schematic information contained in this code can be activated when we recognize the person's face or hear the person's voice and information concerning the person. From a cognitive perspective, according to Bauer & Verfaellie (1988), "the familiar-unfamiliar face distinction" reflects "presence or absence of stored identity-specific information about viewed faces." (p. 241)

Past research has shown support for the idea behind the sequential model of facial recognition. For instance, Tranel, Fowles, and Damasio (1985) found that when presented with a series of faces of celebrities, politicians, and newsmakers drawn from current magazines, college students showed greater SCRs to familiar faces than unfamiliar faces. They also found that familiar faces were rated by subjects as more "significant" than unfamiliar faces, suggesting that highly familiar faces are potentially arousing stimuli (Tranel et al., 1985).

Bauer and Verfaellie (1988) also found in an experiment of psychophysiological responses of prosopagnosics[1] during facial identification tasks that a patient with this disease showed relatively larger electrodermal responses to the names of familiar faces compared to unfamiliar faces.

More recently, Shearer and Mikulka (1996) reported an increase in SCRs as a function of familiar faces. However, the SCR occurred only when coupled with the identification task, indicating that the retrieval of the identity-specific information about faces is an important determinant of face recognition. The result was interpreted by the authors to suggest that such names activate stored identity-specific information in memory. If the face conveys any associated contextual information from past experience, it will carry greater attentional potentials, which subsequently will result in emotional experiences as manifested in greater arousal, greater SCRs in particular. Conversely, if the face is not familiar and does not carry any contextual information for the viewer, then the sequential process will stop right after the initial stage, since there is no need or utility for any further searches. This tendency will be manifested in lesser arousal or lesser SCRs. The same reasoning can be applied to the recognition of communication sources. If a source is perceived by the viewer to be significant, there will be a subsequent search for identity-specific information, which includes associated contextual information from past experiences. This sequential process will be displayed by greater SCRs for the viewer[2].

In sum, prior theory and research suggest an electrodermal discrimination of significant versus non significant communication sources. In fact, not all media sources have the same "signal value" or "stimulus significance" to viewers. Some media sources may be more significant partly because they are perceived by viewers to be more familiar or relevant than others. Likewise, media sources from different program genres are also likely to display different levels of "stimulus significance" to viewers, because the genres provide additional contextual information beyond mere facial recognition.

### Hypotheses

Based on the previous discussion of research and theory concerning facial recognition, two general hypotheses concerning the effects of communication sources on the SCR can be proposed.

*H1a: Different communication sources will elicit different levels of skin conductance responses (SCRs).*

*H1b: Communication sources identified with different genres of TV programs will elicit different levels of skin conductance responses (SCRs).*

While the first hypothesis examines electrodermal correlates of particular sources, the second hypothesis is related to those of particular classes of media sources. The reasoning behind it is that people experience different emotions toward particular classes of media sources. Intuitively, we might guess that entertainment sources will provide viewers with more emotionally associated contextual information than other classes of sources such as newsmakers or politicians, or vice versa depending on individuals' past experiences with them.

One of the consistent findings in facial recognition research is that familiar faces elicit greater SCRs than unfamiliar faces. Familiar faces such as well-known public figures elicit much larger SCRs and are rated as more significant than unfamiliar faces among college students (Tranel, et al., 1985). This is also true for individuals with an inability to recognize faces who are still able to show the orienting response to familiar faces (Bauer & Verfaellie (1988). Thus:

*H2: Familiar communication sources as compared to less familiar sources will elicit greater arousal (SCRs).*

We are attracted to communication sources we like; the more we like a source, the more we will be persuaded by him or her (McGuire, 1969). We are also attracted to sources who are rewarding than those who are not rewarding (Birnbaum & Stegner, 1979). In this sense, those likable sources, *per se*, are significant stimuli from which we all experience various emotions when we encounter them.

Bio-informational theory of emotion posits that the action dispositions and their physiological manifestations are linked to nodes in the brain that represent attributes of the emotion-eliciting stimuli (Lang, 1995). The key to this approach is to investigate the specific attributes of stimuli; that is, those characteristics that become nodes in the emotion network (Detenber & Reeves, 1996).

Clearly, communication sources who are likable and physically attractive are primitive heuristics that, in many instances, influence our judgments and emotional responses by virtue of their associations with specific information and emotions in the brain. For instance, we feel happy when we encounter media sources we like, because it is automatically activated by a simple linkage between those images and feelings. Likewise, we feel the same happiness when we encounter a media source who is physically attractive. This coactivation is the reason why we feel rewarded whenever we see physically attractive models in commercials, even though they have nothing to do with the message provided.

Evidence showing the physiological effects of communicator attractiveness and likability is scarce. However, recent research findings indicate that likable and attractive sources may elicit greater arousal. For instance, Cuthbert et al. (1996) found that when presented with pictures depicting a variety of events, subjects displayed greater arousal to positively-valenced pictures than neutral pictures. By the same token, we can expect that both attractive and likable sources would elicit pleasant feelings in subjects. These happy or positive feelings would be manifested in greater SCRs. Accordingly, it can be expected:

*H3: The more likable a communication source, the greater the arousal (SCRs).*

*H4: The more attractive a communication source, the greater the arousal (SCRs).*

## Method

A within-subjects experiment was conducted to test these hypotheses. The independent variable was manipulated by showing pictures of 22 different communication sources to subjects. The primary dependent variable was electrodermal activity, as measured by the skin conductance responses (SCRs). In addition to SCR measures, subjects were instructed to evaluate their perceptions of each communication source on a paper-and-pencil questionnaire.

### Subjects

Twenty-eight undergraduate and graduate students (12 men, 16 women) enrolled in communication classes participated in the study in exchange for course credits. The experiment was administered to subjects one at a time. All subjects signed an informed consent form before commencing the experiment.

### Stimuli

The stimuli were a total of 22 facial images of newsmakers (e.g., Dan Rather, Tom Brokaw, Joie Chen, Peter Jennings), game show hosts (e.g., Alex Trebek), entertainment hosts (e.g., David Letterman, Jay Leno), and celebrities (e.g., first lady). Two additional slides were shown to serve as practice sources. All stimulus materials were drawn from actual television broadcasts. For newsmakers, both local and national newscasters were randomly selected. To minimize order effects, four orders of picture presentation were constructed so that, across subjects, the same picture was seen in different positions in each presentation.

### Apparatus

All the images were presented on a screen placed approximately 3 m in front of the subjects. A pair of Silver-Silver Chloride AgAgCl electrodes with Velcro straps was used to measure SCRs. All electrodermal activities were digitally recorded in units of electrical conductance using a Biopac MP30 hardware unit and associated psychophysiology software.

### General Procedure

Upon arriving at the laboratory, subjects were instructed to wash their hands using Ivory hand soap. All subjects were asked to sign the informed consent form before commencing the experiment. Electrodes were attached to the palmar surfaces of the distal phalanges of the middle and index fingers of the subject's nondominant hand using Velcro straps. Electrodes were filled with a saline electrode paste recommended by Fowles et al. (1981). Each subject was seated in a comfortable chair and instructed to relax. After a 15-minute baseline period during which instructions were given, each subject was shown two practice sources to allow for adjustment to the experimental procedure and to minimize electrodermal reactivity (Shearer & Mikulka, 1996). After the practice sources, the 22 source images were presented in one of four different orders.

The subject was instructed that a series of pictures would be presented and that each slide would be presented for approximately 6 s, followed by nothing but the blank screen.[3] After watching the sources for 6 s, the subject was instructed to fill out a questionnaire regarding their impressions of the source they had just seen. The subject was presented the next source with a randomly determined intersource interval that varied from 5 to 10 s. The subject repeated this procedure for all twenty two sources, and was thanked after the last source.

### Measures of Source Perceptions

The subject rated each source for familiarity, believability, likability, intelligence, and attractiveness on a scale ranging from 1 (*not at all*) to 9 (*very much*). These characteristics are among the most commonly used dependent measures in previous source-effects studies (Wilson & Sherell, 1993)

To measure impressions of the source, the subject was asked, "How does this person seem?" and instructed to provide his/her ratings on a set nine semantic differential scales. Used in prior research on personality research (e.g., Burgoon & Walter, 1990) and television screen-size effects (Lombard, 1995), these nine items were good/bad, warm/cold, confidence/insecure, sensitive/insensitive, not intimidating /intimidating, friendly/unfriendly, strong /weak, attractive/unattractive, and similar to me/different from me.

Also measured were subject's emotional responses to sources by asking, "How does this person make you feel?" Six bipolar semantic differential items with a 9-point scale were calm/anxious, good/bad, confidence/insecure, safe/threatened, comfortable/uncomfortable, and sociable/unsociable. These items were again derived from previous research on interpersonal distance, personal space, and screen size effects studies (e.g., Burgoon, 1978; Lombard, 1995).

### Skin Conductance Responses (SCRs)

Based on different measurement techniques suggested by researchers (e.g., Lang, 1995), audience's state of arousal was assessed via electrodermal skin conductance responses (SCRs). SCRs, the primary dependent variable in this study, was quantified in such a way that for each source presentation, a latency window of from 1-5 s from stimulus onset was used, and the amplitude of the largest SCR with onset falling within this window was recorded (Cuthbert, et al, 1996; Tranel, et al, 1985). A log transformation (log(SCR+1)) was performed to normalize the distribution (Cuthbert et al., 1996).

### Data Analysis

The primary statistical procedure used to test the hypotheses was a one-way repeated-measures analysis of variance (ANOVA) for H1a and H1b. To examine H2, H3, and H4, regression analyses were used. In addition to the hypothesis tests, some exploratory analysis was also conducted.

## Results

Hypothesis 1a predicted that different communication sources will elicit different levels of skin conductance responses (SCRs). Analysis of the primary dependent variable of subjects' SCRs to the different sources yielded a statistically significant effect, $F(21, 567) = 2.56$, $p < .01$, which indicated that some communication sources elicited greater electrodermal response amplitudes than other sources. Hence, H1a was supported.

Hypothesis 1b predicted that different types of communication sources will elicit different levels of skin conductance responses (SCRs). To test this hypothesis, twenty one sources were categorized into four different types: entertainment, local news, national news, tabloid. One source (first lady) was excluded from the analysis because she was the only source in the category and difficult to classify as a communication source. Results from the one-way analysis of variance (ANOVA) on the primary dependent variable showed a significant mean differentiation as a function of the types of source, $F(3, 557) = 3.44$, $p < .01$, indicating that hypothesis 1b is supported. Entertainment sources ($M = .235$ microsiemens) elicited the greatest SCRs, while tabloid sources ($M = .14$) elicited the least SCRs. Sources associated with Local News ($M = .171$) and National News ($M = .16$) were in between the two extremes.

Hypothesis 2 predicted that source familiarity is positively correlated with level of arousal (SCRs). The results of the regression analyses between source familiarity and the SCRs showed a significant relationship, $F(1, 614) = 29.69$, $p < .001$. The fit model showed source familiarity was a significant predictor of SCRs (*Beta* = .016, $p < .001$). The results indicate that as the source familiarity increases, the SCRs also increase. Therefore, Hypothesis 2 was also supported.

Hypothesis 3 predicted that source likability will elicit greater arousal (SCRs). The results of the regression analyses supported the hypothesis, $F(1, 614) = 5.78$, $p < .01$. Likability, too was a significant predictor of SCR (*Beta* =.011, $p < .01$).

Hypothesis 4 predicted that more attractive sources will elicit greater arousal (SCRs) than less attractive sources. Results from the regression analyses showed that this is not the case, $F(1, 614) = .30$, n.s.). Therefore, H4 was not supported.

### Exploratory Data Analysis

To further examine the relationship between communication source characteristics and viewer responses, data from several additional questionnaire items were analyzed. An one-way analysis of variance demonstrated significant gender differences in the SCRs. For example, across the entire set of sources, male subjects ($M = .21$), compared to female subjects ($M = .15$), displayed significantly greater average SCRs, $F(1, 614) = 8.511$, $p < .003$. Gender of sources also made a difference. Male sources ($M = .19$), compared to female sources ($M = .14$), elicited greater arousal from the subjects, $F(1, 614) = 5.22$, $p < .02$.

The fourteen items related to source perception were subjected to factor analyses. A principal-components analysis with varimax rotation generated three factors of source characteristics : "warmth," "credibility," and "attractiveness." Together, they accounted for 67.5 percent of the variance. Items loading on each factor were summed to create indices. To examine whether different types of media sources impact these composite factors, source types were subject to analyses of variance with the three indices as dependent variables.

Only one factor, "credibility," showed a significant difference as a function of source type, $F(3, 587) = 24.37$, $p < .01$. Tabloid news sources suffered most on credibility, while other types of communication sources were about equal on credibility. Interestingly, entertainment sources were perceived by subjects to be more credible communication sources than newsmakers, although post-hoc analyses showed the difference to be statistically insignificant.

## Discussion

This study attempted to explain how different communication sources affected television viewers' physiological responses. Toward this end, a sequential model of source perception was introduced from the facial recognition theories in cognitive social psychology.

According to this model, viewers first judge whether a particular source they encounter is a significant or familiar face, and if the source is judged to be significant, a more thorough search is conducted, which includes naming of the source or associated contextual information. Although the data presented in this paper were not intended to articulate the nature of the processes underlying source perception, the empirical evidence of increased skin conductance responses (SCRs) after the onset of stimuli indicates the presence of these cognitive efforts amongst receivers.

The results of this study provided additional evidence for the multistage model of face recognition. It was found that different communication sources elicited different levels of emotional responses from subjects. Some media sources were able to elicit greater emotional responses than other sources as manifested by the increased SCRs. Further analyses of the data demonstrated that familiar sources were more likely than less familiar sources to elicit greater responses for the subjects. A reasonable conclusion is that familiar communication sources, like other structural features of television stimuli, bear "signal value," or significance for the organism (Bernstein & Taylor, 1979; Tranel et al., 1985).

Another important finding in this study is that source type also made differences in eliciting physiological responses. This supports the notion of "identity-specific semantic code" (Bruce & Young, 1986) whereby we factor in our prior experiences as well as related contextual information in our responses to communication sources. It was found that subjects displayed the greatest SCR response to entertainment sources ($M = .235$) and the least response to tabloid sources ($M = .14$). One possible explanation for this difference might be that entertainment sources are more familiar than tabloid sources. An exploratory analysis showed a huge difference in the familiarity measure between these two types of sources. The average score for entertainment sources on a 9-point scale was 8.35, while that for tabloid sources was 4.08. Although they were different in other dimensions, it was a single familiarity measure which discriminated the two most successfully. This implies that the two sources possess different "signal values" or significance for the viewers.

Another result that deserves further discussion is that source attractiveness did not have significant effects on physiological responses. Given the empirical evidence that physical attractiveness of the model or spokesperson is an important variable which interacts with the product advertised to affect the viewers and readers' response to the advertisement (Baker & Churchill, 1977), it was hypothesized that more attractive sources must elicit greater viewer attention and emotional responses. But this was not the case in this study.

One possible explanation is that the attractiveness item used in this study might have been overly broad. It might have meant physical attractiveness for some people and general attractiveness for others. Lack of clarity in the measure might have contributed to the null effect.

Viewed from the sequential model of facial recognition, null effects simply suggest that source attractiveness does not motivate viewers for a further search. In other words, the minimal responses after the onset of the stimuli for attractive sources might mean that the subjects terminated any further searches for that particular source. Unlike commercials in which stakes are high for the viewers, the present experiment required minimal involvement from subjects. For that reason, they didn't have to pay extra attention to the sources they didn't know much, even if they were attractive sources. And it is important to notice that all the source images used in this study were somehow public figures and may not have the arousal value of personal acquaintances.

In sum, the present study provided an important conclusion about source effects: there appear to be some physiological correlates of communication sources. Familiar sources are potential "signal stimuli," like other structural features of television. This finding is valid across different classes of communication sources. Besides supporting theorized claims about face recognition, the experiment's findings have practical implications for the industry. The study provides a physiological basis for classifying media sources along receiver-based criteria such as "signal value."

While the evidence provided here can be supportive of the model in facial recognition literature and help our understanding of source effects, future research could identify other physiological correlates of communication sources. The experiment could be replicated for other communication sources not examined in this study. To increase the generalizability of the study, future experiments could benefit from a larger sample of sources.

A limitation of the present study is that all the subjects were students enrolled in various communication classes. Certainly, the subjects participated in this study, compared to students from other disciplines, might have more experiences with various news sources. This limits the external validity of the study. Future studies may benefit by using non-communication students as well as non-student subjects.

Future research could also explore the detailed processes underlying these effects, and what these effects have to do with other aspects of information processing of communication messages, such as memory and retrieval. Researchers have demonstrated that the arousal dimension of emotion had a stable effect on memory performance. Pictures rated as highly arousing were remembered better than low-arousal stimuli (Bradley, et at., 1992). Applying their findings to the results of this experiment, we may conclude that messages delivered by some communication sources will be better remembered than those delivered by other sources.

## Notes

[1] Prosopagnosia is a syndrome in which a patient with brain damage becomes unable to recognize previously familiar persons by visual references to their facial features. The patient recognizes faces as faces, but cannot determine specific facial identity.

[2] It is also documented that people tend to display significantly greater SCRs to cognitively consistent visual stimuli — scenes related to their preferred interests or recreation (Matzman & Boyd, 1984). Although not discussed in a greater detail in this paper, cognitive theories also suggest that people are attracted to others who share similar attitudes, values, and beliefs in order to maintain balance or consistency in their cognitive states (Festinger, 1957; Newcomb, 1961). It is also documented that people tend to display significantly greater SCRs to cognitively consistent visual stimuli — scenes related to their preferred interests or recreation (Matzman & Boyd, 1984). Although not discussed in a greater detail in this paper, cognitive theories also suggest that people are attracted to others who share similar attitudes, values, and beliefs in order to maintain balance or consistency in their cognitive states (Festinger, 1957; Newcomb, 1961).

[3] Six seconds proved to be a practical length for selecting single shots of a wide variety of content (Cuthbert et al., 1996; Detenber & Reeves, 1996).

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# The Crisis of Communication for Citizenship: Normative Critiques of News and Democratic Processes

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# The Crisis of Communication for Citizenship: Normative Critiques of News and Democratic Processes

## Abstract

Over the last 25 years political communication researchers have presented mounting evidence of how the press fails its public mission by not adequately informing the electorate, presenting an accurate picture of civic affairs, or fostering a sense of connectedness to governing institutions. Perceived shortcomings of the political communication system and sustained controversy in the field over the nature and extent of media deficiencies have led scholars to articulate a crisis of communication for citizenship and a crisis of political communication research. Focusing on the literature of the press's expanding role in the "modern campaign," this paper reviews and contextualizes the mounting number of normative critiques of news and democratic processes. The review also addresses the field's historical ambivalence toward normative theory and discusses contemporary democratic expectations of the press. Finally, three developments within political communication theory and research--public journalism, constructionism, and electronic democracy--are reviewed to illustrate how the field might resituate communication in public life.

# The Crisis of Communication for Citizenship: Normative Critiques of News and Democratic Processes[1]

In the two-and-a-half decades since the field of political communication cast doubt and closed ranks on the limited effects model of media influence (Chaffee, 1975; Gitlin, 1978; McCombs & Shaw, 1972), a substantial body of literature critical of media performance in the public sphere has emerged in response to the press's recognized impact on civic affairs (see Blumler & Gurevitch, 1995; Graber, 1996a; Iyengar & Reeves, 1997).[2] The growth of "media politics" (Arterton, 1984), for example, has prompted researchers to more closely examine the press's increased structural role. Political scientists, looking for an explanation for the decline in voter turnout, institutional trust, and the influence of the political parties that began in the 1960s, have set the tone for the resulting interdisciplinary critique of news and democratic processes (McLeod, Kosicki, & Rucinski, 1988), advancing arguments that implicate the media in the erosion of confidence in government (Lipset & Schneider, 1983; Robinson, 1975, 1976, 1977), citizen capacities to know and understand politics (Graber, 1988; Neuman, 1986), and participation in civic and associational life (Putnam, 1995a, 1995b). Rising levels of political apathy, cynicism, and mistrust have also been attributed to the news media (Cappella & Jamieson, 1996, 1997), especially television, which in Rothman's (1979) view has directly "contributed to the decay of traditional political and social institutions" (p. 346). Putnam (1995b) cites survey evidence suggesting that television viewing displaces "nearly every social activity outside the home, especially social gatherings and informal conversations" (p. 679).

Though argued from a variety of perspectives, these diverse criticisms converge on the inability of the mass media to meet the demands of an idealized democratic system, a vision of which has driven much political communication research since the early voting studies (Chaffee & Hochheimer, 1985). According to the assumptions of this system, Chaffee and Hochheimer (1985) observe, citizens "should be concerned, cognizant, rational and accepting of the political system," and "the institutions of communication should be comprehensive, accurate, and scrupulously fair and politically balanced" (p. 268). To the degree that news organizations and individual journalists are perceived to fall short of such normative criteria, they are accused of trivializing political discourse and weakening the accountability of public officials (Iyengar, 1996; Postman, 1986), being overly intrusive, interpretive, and evaluative (Patterson, 1993), liberally biased (Efron, 1971; Lichter & Rothman, with Lichter, 1986), partisan actors (Page, 1996; Patterson & Donsbach, 1996) who are elitist, self-serving, and arrogant (Fallows, 1996), ill-suited for the role of coalition builder (Patterson, 1993), fixated on conflict and mired in a tabloid culture that specializes in prediction rather than assessment (Fallows, 1996; Kurtz, 1993, 1996), carnivorous (Patterson, 1994), and producers and purveyors of just "bad news" (Lichter & Noyes, 1996; Patterson, 1996a, 1996b).[3]

In the opinion of a growing number of political communication scholars (e.g. Bennett, 1996b; Blumler & Gurevitch, 1995; Hacker, 1996; Kellner, 1990; Zarefsky, 1992), American democracy has reached a crisis because the necessary conditions for civic participation, namely adequate information, an accurate picture of public life, and a sense of connectedness to governmental institutions (Blumler, 1983; Hacker, 1996), have been endangered substantially by the press. In particular, Blumler and Gurevitch (1995) argue that the increased "professionalization of political advocacy" of recent decades and organization of civic life around media imperatives serves to marginalize the role of citizens in contemporary democracies.

Instead of active participation envisioned in political science models of "strong democracy" (B. R. Barber, 1984; Fishkin, 1991), civic engagement now largely consists of exposure to the "white noise" (Bennett, 1992) of distorted news coverage (Bennett, 1996a; Fallows, 1996) and manipulative advertising (Diamond & Bates, 1992; Jamieson, 1992; Kern, 1989), staged events that are transient and ephemeral (Boorstin, 1964; Dayan & Katz, 1992), discussion and presentation of issues and ideas in sound bite form (Jamieson, 1988; Kurtz, 1996), and citizen feedback that mainly occurs via scripted talk shows and terse public opinion surveys (Dahlgren, 1995).

Citizens thus have few substantive opportunities to participate in and influence public policy making and are likely to withdraw from the political process altogether. The public sphere has consequently become more the domain of political professionals and advocacy specialists who dictate agendas and less the province of ordinary citizens who constitute an increasingly passive public (Blumler, 1990; Blumler & Gurevitch, 1995). Since this diminished role for citizenship so egregiously contradicts the image of a deliberative, informed citizenry called for by democratic theory, civic life has entered a crisis, precipitated, according to this view, not by media coverage per se but by conceiving of the political system in the image of the media (Zarefsky, 1992) and conducting politics according to the imperatives and values of news (Patterson, 1993).

## Dimensions of the Crisis

Blumler (1983) has identified an internal and external dimension to the problem of communication and democracy. For parsimony, this review focuses on the external aspect of the crisis dealing with the press. "The external dimension," Blumler writes, "stems from the crisis of legitimacy that is currently being experienced by the institution long considered central to the aims of Western democracies--the news media" (p.166). Blumler points to three reasons for journalism's legitimacy crisis: (a) the inability of many groups with a stake in civic affairs to recognize themselves in stereotypical media portrayals, (b) the undermining of conventional assumptions about the nature of news by academic studies depicting journalists as "active creators of political reality" (Graber, 1982), and (c) the growing trend to blame the messenger for the message (1983, p. 167). In this paper, the external dimension of the crisis deals with the veritable litany of problems ascribed to the performance of the press in the "real world" of democratic processes, focusing to a large extent on the press's expanding role in what has come to be known as the "modern campaign" (Chaffee, 1981; D. K. Davis, 1990; Patterson, 1980; Rose, 1994). Journalism's legitimacy crisis parallels the erosion of confidence in political institutions and has accelerated in recent years, according to numerous public opinion polls (Cappella & Jamieson, 1996; Valente, 1997). The external dimension of the crisis, involving the news media's problematic political performance, is referred to as the "crisis of communication for citizenship" (Blumler & Gurevitch, 1995; Entman, 1989). The term crisis is used here not to indicate impending failure but to less alarmingly signal a situation that has perhaps reached a critical phase.

## Organization and Approach

To illustrate how the external dimension of the crisis operates in the literature, this paper is organized into three major sections. First, existing normative theories of press and democracy are presented to place the growing number of media critiques in context. Second, the crisis of communication for citizenship is examined in terms of its historical origins and contemporary ramifications. Finally, three developments within political communication theory and research--public journalism, constructionism, and electronic democracy--are reviewed to illustrate how the field might resituate communication in public life. Because the universe of political communication scholarship is so large (see Johnston, 1990; Kaid & Wadsworth, 1985), only works that are in some way critical of press performance in politics are reviewed. Studies included in this review focus on, but are not limited to, literature of presidential press coverage in the context of the modern campaign. The external crisis references a broad range of research articles, books, essays, and, to a lesser degree, more popular commentaries authored by journalists and articles in journalism trade magazines.

## Normative Theories of the Press and Democracy

### The Social Responsibility Theory of the Press

Normative theories of democracy run deep in the Western canon, beginning with the republican ideas of Aristotle and Plato. Less developed are normative theories of the press and democracy which philosophically examine "how media ought to operate if certain social values are to be observed or attained" (McQuail, 1994, p. 4). In the modern era, the relationship of the mass media to government has been seriously addressed at least since Lippmann's (1922/1965) seminal analysis. But it was not until after World War II that explicit normative standards for press performance appeared in prescriptive form (McQuail, 1992). Perhaps the most cogent single body of criticism of press performance and recommendations for improvement was formulated in 1947 by the Commission on the Freedom of the Press, which Peterson (1956) elaborated as the social responsibility theory of the press.

In its report, the commission attempted to reconcile the commercial imperatives of the media industry to the informational needs of democratic society and essentially threatened the press, including print as well as broadcast journalism, with regulation unless it better fulfilled its social responsibilities. The report enumerated five public services society required of its communication system. In exchange for constitutional protection and freedom from prior restraint by the government, it was the duty of the press to provide "a truthful, comprehensive, and intelligent account of the day's events in a context which gives them meaning." The press should also serve as "a forum for the exchange of comment and criticism," give a "representative picture of the constituent groups in society," help in the "presentation and clarification of the goals and values of the society," and "provide full access to the day's intelligence" (Hutchins, 1947). Together, these normative standards provided an early benchmark, albeit one that was vague and readily satisfied by existing practices, to assess press performance.

The emphasis on a public service mission for the press grew out of a concern, among other things, over the increasing difficulty for citizens to speak and be heard in a mass society. Freedom of the press, social responsibility theory argues, "is a somewhat empty right for the person who lacks access to the mass media" (Peterson, 1956, p. 94) and whose voice is not adequately represented in the range of published opinion. Some safeguards should be developed, then, to insure effective access to or opinion representation by the mass media. Another reason for the emergence of social responsibility theory was an increase in media criticism. As the press grew in size and importance and began to consolidate in the early part of the century, media critiques increased in force and intensity and took on an antitrust, anti-monopoly tone (Peterson, 1956). Partially to address these criticisms, Peterson (1956) recommended that an independent agency should be established to appraise press performance and to report on it each year.

## The National News Council

A quarter century after the Commission on the Freedom of the Press issued its recommendations, the Markle Foundation and the Twentieth Century Fund underwrote the creation of the National News Council in 1973, amidst the tumult of the Watergate scandal. Modeled after the British Press Council, the National News Council was created in an effort "to discipline and defend the American news media" (Brogan, 1985, p. 3). But, as with the Hutchins Commission, the National News Council faced vigorous opposition from the print and broadcast media, especially from The New York Times which led the refusal to cooperate. Defending freedom of the press, Times publisher Arthur Ochs Sulzberger wrote in 1973, "does not begin with an unjustified confession that our own shortcomings are such that we need monitoring by a press council" (cited in Brogan, 1985, p. 27). Not surprisingly, the National News Council "died of poverty and neglect" after a decade of obscure existence (Brogan, 1985, p. 3). Even so, a state-level Minnesota News Council has thrived since 1971 and broadcast journalist Mike Wallace of CBS has recently advocated reintroducing the news council concept nationally (Shepard, 1997). In the absence of governmental regulation or formal monitoring of the press, normative media criticisms from academics, watchdog groups, and media critics within journalism serve to apply the pressure necessary to maintain a certain consensual standard of press performance.

## Contemporary Democratic Expectations of the Press

Contemporary democratic expectations of the mass media have been summarized by Schudson (1995) as well as by Gurevitch and Blumler (1990) as a set of seven or eight normative goals. McLeod et al. (1994) have connected the democratic standards identified by Gurevitch and Blumler to specific constraints and conventions, performance problems, and presumed individual and societal effects of the mass media found in criticism. But, they admit there are problems associated with using such a framework as a base for theory building, in part because many media criticisms are inconsistently supported by reliable evidence. "Discussions of news media faults too often fail to distinguish criticisms based on unsystematic observation from those based on more solid evidence" (McLeod et al., 1994, p. 127). Table 1 shows the goals identified by Schudson (1995) for a media system dedicated to democracy.

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Table 1 about here

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Despite the existence of normative standards for journalism, as well as long-standing codes of ethics by professional associations, Schudson (1995) notes "we are a long way from a coherent normative theory of journalism," adding that "there is little to push news institutions to change this" (p. 29). Democracy in the contemporary world is scarcely conceivable without the mass media, Schudson observes, but whether the press serves the social-political system as well as it might is an open question. Unlike other industries, American journalism is not significantly challenged from abroad. And unlike higher education, the mainstream media are not encouraged to innovate through a diversity of models from within. "Journalism, even at its research centers and with its foundation supporters, seems overcome with the charms of celebrity, commercial success, and national reach" (Schudson, 1995, p. 30).

Gurevitch and Blumler (1990) have identified several structural obstacles hindering the press from fulfilling its democratic expectations, chief of which are conflicts among certain values which may necessitate trade-offs and compromises. "There are tensions, for example, between the principle of editorial autonomy and the ideal of offering individuals and groups wide-ranging access to the media" (Gurevitch & Blumler, 1990, p. 271). Secondly, knowledge and status differentials separating ordinary citizens from political elites impose limits on the "participatory energy" the system can generate. Third, while democratic theory presupposes an engaged citizenry, in a free society people may choose to be decidedly apolitical. Fourth, press performance depends in large measure on the broader social, political, and economic environment in which the media operate. Moreover, the internal constraints media institutions place on themselves limit their ability to serve a purely democratic purpose. "Through their acceptance of the imperatives of competition, and in their adherence to a self-generated and self-imposed set of professional standards, they shape their contributions to the political process in ways that may well fall short of the democratic ideals they claim to serve" (Gurevitch & Blumler, 1990, p. 283).

The contradictions inherent in many democratic expectations of the mass media, stemming from institutional constraints and conflicts among competing values, arguably prevent the media from fulfilling their social responsibilities. Yet the press, as a democratic institution, remains responsive to prevailing sentiments (Gurevitch & Blumler, 1990), even if it is resistant to reform. So long as popular media criticism relies on unsystematic observations and empirical scholars fail to link knowledge derived from scientific methods with the development of normative theory, research itself may be implicated in the crisis of the public sphere. The next section outlines the consolidation of the field and details the problems of the press and democracy as the crisis of communication for citizenship.

## The Crisis of Communication for Citizenship

### Consolidation of the Field and the Turn to Strong Effects

Communication research emerged as a distinct domain of investigation in the decade from 1945 to 1955 with the publication of classic works by Berelson, Hovland, Lasswell, Lazarsfeld, Merton, and Schramm, among others (see Delia, 1987). But it would take another two decades for the "subfield" of political communication to develop its own unity and sense of identity. One of the reasons for political communication's belated consolidation was its cross-disciplinary origins. Then as now, the study of media and politics spanned a wide variety of research topics and traditions, including rhetorical analysis, propaganda analysis, persuasion and attitude change studies, public opinion research, voting behavior studies, and systems analysis (Delia, 1987; Nimmo & Sanders, 1981b). Political communication was not identified as a discrete area of social scientific research until the mid-1950s (Eulau, Eldersveld, & Janowitz, 1956; Nimmo & Sanders, 1981b).[4] As if to make up for its late arrival, political communication has produced a voluminous literature in the span of a few short decades. The boundaries of the field have widened considerably, moving beyond the "voter persuasion paradigm" with the development of cognitive, institutional, cultural, cross-national, critical, feminist, postmodern, and constructionist perspectives (see Johnston, 1990; Kaid & Wadsworth, 1985; McLeod et al., 1994; Nimmo & Sanders, 1981a; Swanson & Nimmo, 1990). The field has become so diffuse that bridging disciplinary divides and finding common themes among these disparate approaches is now a concern (Graber, 1987; Jacobs & Shapiro, 1996; Jamieson & Capella, 1996).

Another reason for the field's belated development involves limited effects conceptions of media influence that dampened interest in research. "Partly because Berelson (1959) prematurely declared the death of communication research in 1959," McLeod et al. (1988) observe, "a virtual moratorium on political media research prevailed until the 1972 campaign" (p. 9). The field's rebirth coincided with the rise of a stronger, more cognitively oriented effects paradigm, memorialized by Chaffee (1975) in an important edited volume (Jamieson & Cappella, 1996). Numerous edited volumes, readers, and core texts addressed exclusively to political communication have subsequently appeared, including, among others, books written or edited by Kraus and Davis (1976), Graber (1980), Nimmo and Sanders (1981a), Jamieson and Campbell (1982), Graber (1984), Sanders, Kaid, and Nimmo (1984), Denton and Woodward (1985), Paletz (1987), Alger (1989), Swanson and Nimmo (1990), Semetko et al., (1991), R. Davis (1994), Blumler and Gurevitch (1995), Swanson and Mancini (1996), and Iyengar and Reeves (1997), solidifying political communication's interdisciplinary status. Several of these works are now in their second or later editions (e.g. Graber, 1996a).

Energized by a renewed conviction that media may indeed have profound, if not "massive," cognitive and electoral effects (Ansolabehere & Iyengar, 1995; Iyengar, 1991; Iyengar & Kinder, 1987; Mutz et al., 1996), and provoked by an interest in "media politics" following the image-oriented election campaigns of the Reagan-Bush era (Arterton, 1984; Bennett, 1996a; Jamieson, 1996a; Kellner, 1990; Kerbel, 1995; Parenti, 1986), researchers in the field are well on their way to making the 1990s an important decade for political communication scholarship.5 Established journals in both communication and political science, including American Politics Quarterly (Welch, 1991), the Journal of Communication (Siefert, 1991), Communication

Monographs (Burgoon, 1992), American Behavioral Scientist (Payne, 1993, 1997), Communication Research (Chaffee & Jamieson, 1994), Journalism and Mass Communication Quarterly (Folkerts, 1995), Research in Political Sociology (Wasburn, 1995), the Annals of the American Academy of Political and Social Science (Jamieson, 1996b), Media, Culture, and Society (Sparks, 1996), and PS: Political Science & Politics (Hauck, 1996), have featured special symposia on media and politics, focusing particularly on election research and the impact of new communication technologies on politics. To gauge the health of the public sphere in the 1990s means to analyze the media's role in political life.

## Origins of the External Crisis in Media Politics

The origins of the external crisis of communication for citizenship can be traced to two developments within the media/politics nexus: the rise of the modern campaign and the evolution of what Blumler (1990) calls the modern publicity process. The modern process of presidential selection materialized in the late 1960s. "The turning point appears to be the Democratic National Convention of 1968, a fractious and, according to some, illegitimate nominating convention" (Rose, 1994, p. xii). Following the nomination by party regulars of Hubert Humphrey, who did not enter a single primary, progressive Democrats demanded a more opening nominating system. The ensuing McGovern-Fraser reforms of 1970 favoring direct-vote primaries over caucuses opened a vacuum in the political system between candidates and voters, giving the press a more prominent role in the candidate selection process (Arterton, 1984; J. D. Barber, 1978; Patterson, 1980, 1993). Institutional changes to the political system, including open and fluid nominating procedures, candidate-centered electioneering, the rise of political consulting, and public financing of presidential campaigns, diminished the influence of the political parties, giving rise to what Patterson (1980) calls the "mass media election." As the ability of parties to deliver votes declined, Swanson (1992) notes, "campaigning and governing have become steadily more intertwined with the priorities and interests of political journalism" (p. 398).

Leading political actors must accordingly adopt the twin roles of policy maker and publicist and remain ever mindful of how decisions are liable to be influenced by how they will play in the press. Thus, Blumler (1990) notes, "the modern publicity process puts a high premium on getting the appearance of things right" (p. 106). In the contest for influence over popular perceptions, candidates and political advocates see themselves engaged in competitive struggle not just with their political opponents but increasingly with the press itself. Not wanting to leave opinion formation to chance, they employ strategies to shape the news consistent with their message. In such a milieu, certain features of political coverage, including journalists' fixation on process over substance and "disdaining the news" (Levy, 1981), or coloring reports of events with judgmental words or phrases to demonstrate the reporter's distance from their public relations purpose, can thus be regarded as attempts by journalists to re-establish editorial control over the news (Blumler & Gurevitch, 1996). "Such a publicity process," Blumler and Gurevitch (1996) note, "is not exactly rich in vitamins for citizenship" and tends to "narrow the debate; make negative campaigning more central; foster cynicism; and, over-represent newsmaking as a field of power struggle rather than a source of issue clarification" (p. 129).

Perspectives on the External Crisis

The crisis of communication for citizenship surfaces in at least three different "real world" contexts: (a) the discourse of individual rhetors, (b) the relationships between political and media institutions, and (c) the political-economic structures of society that critical scholars argue limit the range of free expression. While these research emphases frequently overlap and are often addressed within the same study, some general patterns can be discerned.

From a rhetorical standpoint, Zarefsky (1992, p. 413) has identified a "crisis in American political communication" owing in part to a debasement of political debate, which has been formatted for television. In the presidential debates, visual emphasis on confrontation and restrictions on response times quicken the pace and add an element of drama, but Zarefsky (1992) notes, these same conventions "thwart sustained discussion of serious issues; they encourage one-liners and canned mini-speeches" (p. 412). Communication technology is also indicted for placing discursive restrictions on the form and content of political discourse (Jamieson, 1988; Postman, 1986) and for "charming the modern voter" (Hart, 1994) by making distant political figures seem closer, more accessible, and more responsive than they really are (see also Meyrowitz, 1985). Jamieson (1992) suggests that traditional genres of political dialogue, including reasoned argument, engagement in ideas, and accountability, have been corrupted by the transmogrification of campaigning into a series of visually evocative ads and soundbite stump speeches, which in turn are given adlike news coverage. "Candidates are learning to act, speak, and think in television's terms" (Jamieson, 1992, p. 206) and the news, largely due to the shrinking soundbite in both broadcast and print journalism (Adatto, 1990;

Hallin, 1992; Jamieson, 1988; Mickelson, 1989), has substituted rhetorical assertion for factual evidence.

Institutional approaches, particularly those elaborated by Blumler and Gurevitch (1995, 1996), propose that the roots of perceived media deficiencies are systemic, that is, "they inhere in the very structures and functioning of present-day political communications systems" (1995, p. 4). In this view, the failures of political communication practices to serve democracy stem from the interplay of political and media institutions, as well as audiences. The role relationships between journalists and politicians have been described in terms of mutual dependency and reciprocal influence (Blumler & Gurevitch, 1995). With the rise of attack journalism by the press (Sabato, 1991) and media management strategies by political consultants (Sabato, 1981), however, these relationships have become increasingly vitriolic. "The resulting combination of denigrated politicians and frustrated journalists has been a recipe for the emergence of an adversarial climate that seems unprecedentedly fierce and abiding--a chronic state of partial war" (Blumler & Gurevitch, 1996, p. 129). Writing about the "political-media complex," which like President Dwight Eisenhower's fabled military-industrial complex "wields influence at every level of society," Swanson (1992, 1997) suggests that particularized interests often cause government and media organizations to conflict with each other despite their mutual dependency in the battle over public opinion. In this competitive struggle, the public interest is not represented per se; rather, voter attention and approval are treated as "commodities to be produced by the most efficient means possible and bartered for advantage" (Swanson, 1992, p. 399).

From a political-economic perspective, Kellner (1990) argues that the news media "not only have failed in recent years to carry out the democratic functions of providing the information necessary to produce an informed citizenry but also have promoted the growth of excessive corporate and state power" (Kellner, 1990, p. xiii). Corporate control of media institutions, the decline in the newspaper industry of economic and editorial competition, and the growing concentration of media institutions into fewer and fewer hands (Bagkidian, 1992), has constricted the range of expressed opinion while benefiting conservative, monied interests at the expense of a vibrant public sphere. At the same time, the trend toward deregulation in broadcasting has resulted in television becoming "increasingly embedded in the corporate structure of big business" (Curran, 1996, p. 86). Argued from within a political economic or neoMarxist framework, critical authors see the performance of political journalism as less of a problem than the limitations that corporate capitalism and organizational imperatives place on the professional freedoms of individual reporters (Gitlin, 1980; Hallin, 1994; Kellner, 1990). Herman and Chomsky (1988) apply a propaganda model to the political performance of the media, depicting how an underlying elite consensus largely structures the news and marginalizes dissent while allowing dominant special interests to get their message across to the public.

While rhetorical, institutional, and political-economic arguments provide insight into the crisis of the public sphere, no single emphasis is inclusive enough to unify the disparate crisis literature. The following section proposes two valuative propositions to address what is conceptually common in empirical findings and/or normative critiques of the media and politics. In addition to organizing the literature, these propositions are presented as a device for encouraging communication across disciplinary divides and furthering consensus, or at least coherence, rather than fragmentation in the field.

## Resituating Communication in Public Life

Three developments within political communication suggest ways that media may actually nurture citizenship and illustrate how the field might resituate communication in public life: public journalism, constructionism, and electronic democracy. Each of these perspectives produces a cogent critique of the press and democracy, thus contributing to the external crisis literature, yet by positioning the press as a vital element of civic participation and public opinion formation, they open new avenues for theorizing media and democracy--and ultimately reforming the press.

### Public Journalism: A New Normative Theory of the Press

Since de Tocqueville (1840/1969) newspapers have been regarded as a positive influence on citizenship. Public, or civic, journalism argues that this pro-social feature of the press should be carried a step further; rather than remaining detached, the press should adopt an activist agenda beyond telling the news and become a fair minded, engaged participant in public life (Merritt, 1995). Public journalism--a new and developing normative theory of the press--acknowledges that public support for journalism has eroded and that newspapers in particular have a substantial role to play in reviving civic life, cultivating citizenship, and improving public dialogue, particularly at the local level (Glasser, 1991; Merritt, 1995; Rosen, 1996; Stepp, 1996). Rosen (1996) hopes the public journalism movement "might develop into a kind of public philosophy for a re-energized press" (p. 50).

Less altruistically, public journalism is also seen as a way to restore journalism's sagging reputation. Revitalizing civic life is important to the news business because a "public that does not attend to public affairs, that retreats deeply into private life and concerns, has no need of journalists and journalism" (Merritt, 1995, p. 10). Consistent with the earlier social responsibility theorists, advocates of public journalism accede that the press is implicated in the problems of civil society and has a responsibility to maintain the kind of civic climate that gives democratic politics a chance to do its work (Rosen, 1996, p. 4). Without sacrificing its objectivity, balance, and professionalism, journalism should promote democracy without advocating particular solutions, thereby becoming a civic catalyst. Public journalism views the press, then, as an important actor in the political arena but not in a partisan sense. In a Washington Post column that helped launch the movement, Broder (1990) declared that "it is time for those of us in the world's freest press to become activists, not on behalf of a particular party or politician, but on behalf of the process of self-government" (p. A-15).

While there has been a constituency for Broder's call within journalism, it has not been his colleagues in the national media, Rosen notes. Instead, Broder's appeal for a more activist press "helped inspire some of the early experiments in public journalism at the local level" (Rosen, 1996, p. 72), particularly at small- to medium-size newspapers such as the Charlotte Observer, Minneapolis Star Tribune, and Norfolk Virginian-Pilot. Public journalism, which by 1995 had been tried in one form or another at over 150 news organizations (Rosen, 1996), adheres to a theory of praxis in the public sphere and encourages media organizations to: (a) forge alliances with community groups and listen to citizens on a regular basis as part of an ongoing civic dialogue, (b) sponsor deliberative forums where agendas can be shaped, and (c) prod citizens and government officials to act on the public's judgment (Stepp, 1996).

In the tradition of Dewey (1927) and later writers who have advocated an enhanced social-political role for critics and public intellectuals (e.g. Avery & Eadie, 1993; Jacoby, 1987;

Klumpp & Hollihan, 1989; Lentricchia, 1983), Rosen (1994), the leading academic proponent of public journalism, argues that communication scholars, or "media intellectuals," also have a political responsibility to restore vitality to the public sphere. Rather than remaining critically detached, critics of media and public life should become moral actors (Klumpp & Hollihan, 1989) and effectuate their theoretical ideals by bringing citizens and media organizations together to make civic life more open and participatory so that citizens can be recast as actors in, rather than passive spectators of, the public drama (Rosen, 1994; Clark, 1997).

Inasmuch as public journalism represents an attempt to involve citizens in the news process and transform a one-way implement of mass communication, the newspaper, into a public forum for two-way interactive discussion, it also implies that the press should relinquish some of its power to decide what is important and how information is portrayed. Perhaps understandably, then, the major media have generally not been supportive of public journalism's suggestion to redefine journalism as a "discussion." As with the failed National News Council, the New York Times has set the tone, with former executive editor Max Frankel (1995) asserting that, "American journalism sorely needs improvement...[but] reporters, editors and publishers have their hands full learning to tell it right. They should leave reforms to the reformers" (p. 30).

## Constructionism[6]

Constructionist approaches to civic involvement and public opinion formation also see forums for democratic action as essential to staving off cynicism and apathetic responses to the pseudo-environment of mediated politics. Constructionist studies foreground social interaction and, in the research setting, group and depth interviews. The talk in such interactional research settings becomes an opportunity for socially meaningful opinion production rather than the impersonal, positivist extraction of information assumed to be pre-existing inside people's heads (Dahlgren, 1995). Recent research programs taking a constructionist approach (Gamson, 1992; Just et al., 1996; Neuman, Just, & Crigler, 1992), for instance, have found that political beliefs and shared knowledge of the world are determined largely by how people, in social contexts, actively interpret the images and messages carried by mass media.

"Constructionism focuses on 'common knowledge' as opposed to 'public opinion' [and] emphasizes that the structuring and framing of information is not unique to each individual but aggregates into the cultural phenomenon of shared perspectives and issue frames" (Neuman et al., 1992, p. 18). Consistent with this position, Dahlgren (1995) asserts that, "without discussion among citizens, the label 'public' becomes meaningless" (p. 151). Constructionism thus posits that, as active meaning-makers, citizens are not as ill-informed, apathetic, and cynical as conventional opinion surveys imply. Even if only a limited number of political facts can be recalled from memory, ordinary citizens possess the ability to "uncover the connections between private circumstances and public affairs, and critically to analyze current issues within the context of group interaction" (Dahlgren, 1995, p. 153). The democratic promise of such an active citizenry may be mitigated, however, by the disjuncture "between what the mass media emphasize and what the media audience tells us is important and relevant to their lives" (Neuman et al., 1992, p. 111).

### Electronic Democracy

A recently revitalized area of political communication research focuses on the role that electronic media use plays in civic and associational life. In this literature, the mass media are seen as central to the process of community building and have the power to substantially influence the bonds of social connectedness and trust that weave together the societal fabric (Arterton, 1987; Pool, 1990; Putnam, 1995a, 1995b). As with previous research (e.g. Robinson, 1975), television receives special attention. More current scholarship in this tradition has been directed at the relationship between mass media and the fate of various traditional associations that de Tocqueville (1840/1969) admired as the building blocks of American democracy. The Tocquevillean ideal is captured by the influential 19th-century French writer's observation that, "Americans of all ages, all stations in life, and all types of disposition, are forever forming associations" (p. 513) and working together in common cause. Putnam (1995a, 1995b), a "neoTocquevillean" critic of the media, asserts that the introduction of television into American society in the 1950s was a major factor in the subsequent decline of social trust, community networks, and participation in civic organizations. Partly due to the corrosive influence of television on civic life, Putnam argues, the country's supply of social capital, or citizen engagement in public affairs, has eroded (see also Mancini, 1997). This privatization of public life through technological means will, according to Pool (1990), "promote individualism and will make it harder, not easier, to govern and organize a coherent society" (p. 262). Newspaper reading, which shows a positive association with social trust and group membership in Putnam's study, is usually spared such criticism.

Another approach to analyzing the relationship between news media and citizenship is offered by the participatory potential of the "new media," which a growing body of literature on electronic democracy views as a possible answer to the exclusionary nature of traditional one-way mass media systems (Arterton, 1987; Friedland, 1996; Glass, 1996; Graber, 1996d;

Grossman, 1995; Hacker, 1996; Rash, 1997). A basic tenet of this literature is that interactive media, especially talk radio, call-in television, the Internet and World Wide Web, have the capacity to directly engage ordinary citizens in democratic processes. Though flanked by utopians and pessimists at the extreme ends, some new media researchers argue that interactive media involvement, especially talk radio, call-in television, and Internet use, might be conceptualized as a substantive mode of civic participation and opinion activity (e.g. Bucy, D'Angelo, & Newhagen, in press; Hofstetter et al., 1994; O'Sullivan, 1995; Page & Tannenbaum, 1996; Pan & Kosicki, 1997) rather than a distraction or detriment to democracy. From this perspective, questions about democratic legitimacy and civic involvement in the face of low voter turnout, decreased traditional participation, and an apparently ill-informed mass electorate (Neuman, 1986) may be explained by an important criterion variable that isn't being measured: civic engagement through media. Graber (1996d) contends that the chief change brought about by the new media is the empowerment of media users. "Thanks to the new electronic networks, individuals can now inform people worldwide and mobilize them for political action" (p. 34).

## Conclusion

This review of normative critiques of news and democratic processes leads to three concluding remarks about political communication scholarship. First, in order to effectively address the external crisis--the crisis of communication for citizenship--political communication scholars perhaps need to accept the historical fact that the press as an institution has only evolved organically, in response to broad cultural changes, over a period of decades, if not centuries (Emery & Emery, 1996; Leonard, 1986; Schudson, 1978, 1995), and typically not in direct response to calls for press reform. Since the rise of the modern campaign and modern publicity process (Blumler, 1990), however, the political press has changed dramatically, guided by professional values and the economic imperatives of the market rather than a coherent normative theory of journalism (Schudson, 1995). The consequences of this institutionally driven arrangement are well reflected in the crisis of communication for citizenship, which the field has resoundingly substantiated. Second, political communication researchers are ideally situated to fill this theoretical vacuum and have begun to do so, as the burgeoning public journalism, constructionist, and electronic democracy literatures indicate, but must be willing to exchange their normative reticence and prescriptive exuberance for a renewed commitment to systematic evaluation of news norms and news media purposes (Gans, 1983). Third, even so, political communication scholars should proceed with realistic expectations. To the degree that researcher assessments of political coverage are contrasted with idealized conceptions (Chaffee & Hochheimer, 1985) rather than desired but attainable practices, the gulf between normative preferences of press conduct and actual media performance is only apt to widen. Because of the impervious quality of the press to most criticism (Avery & Eadie, 1993; Brogan, 1985; Jamieson, 1996a; Rosen, 1996), scholars should not pin their hopes of solving social or political problems by way of press reforms. As Lippmann (1922/1965, p. 229) noted of the shortcomings of American democracy 75 years ago, "the trouble lies deeper than the press, and so does the remedy."

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## Endnotes

[1] Although this literature review is not limited to a U.S. context, it focuses on the trends and patterns of American political communication research. Many of the arguments are undoubtedly applicable to other industrial democracies.

[2] Contemporaries of researchers who conducted the early voting studies introducing the concept of limited media effects challenged this notion from the outset (see Lang & Lang, 1959).

[3] This criticism has not gone unnoticed by the press. Washington Post columnist Richard Harwood (1996) recently observed: "The academic community, once smitten with the media [during the Vietnam and Watergate eras], has gone revisionist, producing books and tracts in great numbers denouncing the press for cynicism, ignorance, and mindless arrogance that endanger democracy and the political process. We are also capitalist tools, as Noam Chomsky and Ralph Nader frequently remind us" (p. A-23).

[4] While empirical studies of political communication processes were somewhat slow to develop, rhetorical essays on the history or criticism of political discourse have appeared in the Quarterly Journal of Speech since its founding in 1915 (Nimmo & Sanders, 1981b).

[5] In recognition of the growing importance of communication research to politics, the journal Political Communication came under the joint sponsorship of the political communication divisions of the American Political Science Association and the International Communication Association in 1993 (Graber, 1993a). In 1996, the journal grew by 25 percent, increasing its annual number of pages to 500 (Graber, 1996b). Also in 1996 a second major scholarly journal devoted to media and politics, the Harvard International Journal of Press/Politics, was founded with the interdisciplinary intent to "stimulate dialogue among different branches of scholarship and leapfrog the sadly parochial borders that now separate scholars from journalists" (Kalb & Norris, 1996, p. 1).

[6] This research tradition has also been called constructivism, which has been applied in a more general sense to the study of human communication (see Delia, 1977; Swanson, 1981). The basic focus of both constructionism and constructivism is on interpretive processes.

Table 1

Normative Goals for a Media System Dedicated to Democracy

1. News media should provide citizens fair and full information so that they can make sound decisions as citizens.

2. News media should provide coherent frameworks to help citizens comprehend the complex political universe. They should analyze and interpret politics in ways that enable citizens to understand and to act.

3. News media should serve as common carriers of the perspectives of the varied groups in society; they should be, in the words of Gans (1979) "multiperspectival."

4. News media should provide the quantity and quality of news that people want; that is, the market should be the criterion for the production of news.

5. News media should represent the public and speak for and to the public interest in order to hold government accountable.

6. News media should evoke empathy and provide deep understanding so that citizens at large can appreciate the situation of other human beings in the world and so elites can come to know and understand the situation of other human beings, notably non-elites, and learn compassion for them.

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From Schudson (1995, pp. 28-29).

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# The Hoopla Effect: Toward a Theory of Regular Patterns of Mass Media Coverage of Innovations

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# The Hoopla Effect: Toward a Theory of Regular Patterns of Mass Media Coverage of Innovations

## Introduction

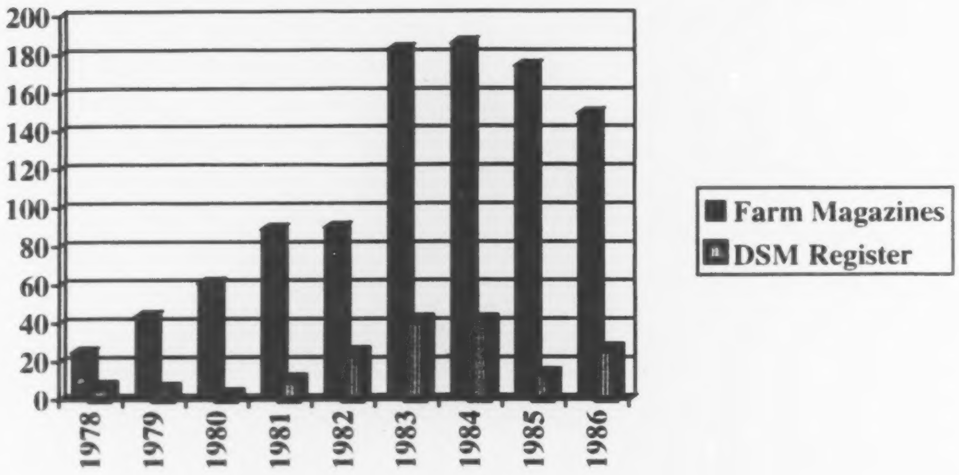
Although it has been commonly assumed that mass media "hype" new technological inventions, there has not been much scientific investigation of how this occurs for specific innovations, and even less examination of possible common patterns that might cut across topics. The general hypothesis of this paper is that, for a number of reasons, coverage of new scientific or technological topics begins at a low level, rises to an optimistic crescendo that we have named "The Hoopla Effect," and then declines. This pattern of coverage is often unrelated to actual adoption or use patterns. In fact, at the very time coverage is in decline, actual adoption and use may be on the increase. The expectation of the research was that the Hoopla Effect would operate in elite media as well as non-elite media, and that it could be predicted to occur across very different kinds of technological innovations, from health-related areas to computers. By understanding how the cycle works, information sources, editors and reporters, and consumers can improve their media behavior in a variety of ways. Information sources can learn at what point their information provision might lead to a "Hoopla Effect," or how to take advantage of a Hoopla Effect that has already begun. Editors, reporters and science writers can learn more about these science and technology cycles, and can be more sensitive to the need to place information about new technologies in perspective. Media consumers can be educated to understand the cycle of information about these new scientific and technological developments, and place coverage of them in perspective.

For this study, the coverage of two different technological innovations: (1) the use of oat bran to reduce cholesterol; and (2) the use of videotex/teletext technologies, was examined. Coverage was divided into three time periods: (1) Pre-hoopla, characterized by a low level of coverage that was expected to focus mainly on research and scientific developments; (2) Hoopla, characterized by a steep increase in coverage that was expected to be highly optimistic about the innovation; and (3) Post-Hoopla, in which coverage declines in volume and was expected to become more balanced (more qualifying information, more negative impacts, a more realistic assessment). Oat bran and videotext were selected as the topics for this study because each represented an innovation that has received substantial press coverage over time, and because each innovation had run its course so that the complete cycle could be studied. For oat bran, the coverage was stimulated by the publication of a book, *The 8-Week Cholesterol Cure*, in March, 1987 (Kowalski, 1987). For videotext, a number of uses of videotext were promoted in the early 1980s, including the launching of Knight-Ridder Corporation's Viewtron experiment in October, 1983 (Fidler, 1997. For Videotext innovations of this time period, also see Abbott, 1989; Bolton, 1983; Ettema, 1983; Jorgensen, 1985; Paisley, 1983; Pfannkuch, 1988; and Rice and Paisley, 1982). For this study, coverage of these issues was examined in both elite newspapers (*New York Times, Washington Post, and Los Angeles Times)*, and other major newspapers (*Atlanta Journal, The Baltimore Sun, The Chicago Tribune, Christian Science Monitor, The Milwaukee Journal, The Louisville Courier-Journal, The St. Louis Post-Dispatch, The Miami Herald, The Kansas City Star*, and *The Wall Street Journal)*. Coverage in three major news magazines was also examined: *Newsweek, U.S. News and World Report, and Time*.

## Previous Research

Interest in this area and the coining of the term "Hoopla Effect" came from a continuing study by Eric Abbott (Iowa State) and Paul Yarbrough (Cornell University) of the interplay between information and adoption of microcomputers by farmers in New York and Iowa from 1980-1998. As a part of this research, coverage of microcomputers in *The Des Moines Register* and in a large group of agricultural magazines was examined from 1980-1986. It was found that coverage of microcomputers surged in the 1983-85 period (see Figure 1), and that predictions embedded in articles were very positive ("There will be a computer on every farm by 1990"). A number of new farm magazines were initiated during this period devoted exclusively to farm computing. However, during this same time period, actual adoption of microcomputers by farmers was low (6.4% in 1984 in Iowa) and increasing at only 1 to 1.5 percent per year. By 1986, mass media coverage had begun to decline in the media, although the actual rate of adoption by farmers continued at the same rate as before. Coverage in the later period was also less positive, pointing out cases in which computers were not as useful as had been originally predicted. At a research presentation in the Department of Communication, Cornell University, in April, 1989, Yarbrough presented the "Hoopla Effect" and speculated that it might be generalizable to other innovations.

**Figure 1**
**Farm Media and Des Moines Register Coverage of Computers: 1978-1986**



Yarbrough's "Hoopla Effect" is similar in some respects to predictions made by several other researchers. The idea that there would be a predictable cycle of coverage of certain types of problems or innovations was put forward by Anthony Downs (1972), who was concerned about patterns of media coverage of environmental issues. In what Rogers et al (1991) have referred to as a *natural history* explanation, Downs predicted that there would be an "issue attention cycle" of coverage of environmental problems and their technological solutions that could be divided into five periods:

(1) The Pre-Problem Stage: This prevails when some highly undesirable social condition exists but has not yet captured public attention, even though some experts may already be alarmed by it. Usually, objective conditions regarding this problem are far worse during the pre-problem stage than they are by the time the public becomes interested in it;

(2) Alarmed Discovery and Euphoric Enthusiasm. As a result of some dramatic event (such as the ghetto riots of 1965 and 1967), the public suddenly becomes both aware of and alarmed about the evils of a particular problem. This alarmed discovery is

"invariably accompanied by euphoric enthusiasm about society's ability to 'solve this problem' or 'do something effective' within a relatively short time." Downs believes that this outlook is rooted in the great American tradition of optimistically viewing most obstacles to social progress as external to the structure of society itself. A technological solution is initially assumed to be possible in the case of nearly every problem.

(3) Realizing the Cost of Significant Progress. Here, there is a gradually spreading realization that the cost of "solving" the problem is very high, requiring financial resources and major sacrifices by powerful groups in society.

(4) Gradual Decline of Intense Public Interest. As people realize how complex the problem is, three reactions set in: (a) some get discouraged; (b) others feel threatened, so they stop thinking about the problem; and (c) others become bored by the issue.

(5) The Post-Problem Stage. The issue moves into a prolonged limbo -- a twilight realm of lesser attention or spasmodic recurrence of interest. However, interest does not disappear completely because often businesses or institutions created during the second period persist, influencing future coverage. Thus, coverage does not return to initial levels.

Although Downs' work has often been cited by researchers conducting later studies, this was not an empirical study, and neither the existence of the stages described nor the tone of the coverage could be confirmed.

In a detailed analysis of coverage of AIDS in the 1980s, Rogers, Dearing and Chang (1991) conceptualize Downs' natural history approach as one cyclical component of the larger theory of agenda setting. A second component is "public arena models," which suggest that new public issues are constantly arising, competing and replacing existing issues, and gradually falling from media view. In their investigation, they found that several sequential developments combined to keep the AIDS issue in the public media longer than might have been expected. Each event "remade" the AIDS story and kept it in the news. One such event was from a scientific source -- the Journal of the American Medical Association -- which in 1983 suggested that AIDS might be transmitted by "routine household contact." A second was the announcement that actor

Rock Hudson had AIDS. This study also examined the relationship between elite newspaper coverage and use of the information in other media. Although the study found that the *New York Times* ran more stories in total than other media, results showed that the Times started rather slowly in its coverage of AIDS, so that there was no strong evidence of agenda setting in the early years. (The study examined coverage in *The New York Times*, *Los Angeles Times*, and *Washington Post*, as well as CBS, NBC, and ABC television network evening newscasts). Finally, this study also compared media coverage of AIDS with actual reported AIDS cases. Results showed that "the real-life indicator is far from a complete explanation of media coverage." In 1988, when actual AIDS cases increased rapidly, media coverage decreased.

Neuman (1990) attempted to identify a threshold level at which the media cycle of coverage of a topic would "take off" in terms of public response. Although he found that the type of event made a difference, he concluded that in general, a certain amount of coverage of a topic will generate a "take off" response on the part of the public, which comes to view the problem as one that is important. In coverage of Vietnam, for example, 150 stories per month in *The New York Times*, or 15 articles per month in a selected group of 30 national magazines (*Time*, *Newsweek*, *Reader's Digest*, *Atlantic*, *New Republic*, *Business Week*, etc.), was sufficient to cause the public to select the issue as being "the most important."

Several other recent studies have examined cycles of coverage of information technologies. Roger Fidler, who helped Knight-Ridder develop and launch the Viewtron videotext experiment of the 1980s, notes that: "The announcement of practically every major 'discovery' or 'breakthrough' in the past two centuries has been immediately followed by a deluge of wild speculation and hyperbole proclaiming the birth of a new era or a revolution in the making. So hungry are the media and their audiences for stories about the promise of things "new" that in recent years the hype has begun to precede and overshadow the formal announcements." (Fidler, 1997, p. 253). Fidler, Brody (1991), Klopfenstein (1985) and others have noted how industry and promoter self-interest, coupled with an enthusiastic and optimistic media, consistently create "vaporware," products that either will never actually exist or are touted as being far superior to what the actual product will be. Klopfenstein's analysis of the emergence of VCRs and videodisc technologies analyzed why printed forecasts for these innovations "were overly optimistic in their predictions for market acceptance." Klopfenstein notes that it is inevitable that media will print forecasts about new technologies before they diffuse. In 1971, a *U.S. News and World Report* article about cable television suggested that "Cable could bring two-way broadband communications to every home....including computer links to information banks at libraries, medical centers and other institutions; home fire and burglary protection; delivery of medical, welfare, and other social services; and facsimile reproduction of documents, newspapers, magazines and mail" (U.S. News, 1971, p. 49). Although cable does possess the potential to do these things, most cable systems now still lack the necessary capacity.

Bryant, Gonzenbach and McCord (1994) studied coverage of "The Information Highway" in six leading U.S. newspapers (*The New York Times, Los Angeles Times, Washington Post, Dallas Morning Star, Chicago Tribune, and Atlanta Journal/Constitution*) in 1993. They documented a take-off in media coverage on this topic, moving from a mean of 3.85 articles in March, 1993, to 21.14 articles in October, 1993, and 74 articles by May, 1994. This surge in coverage, they concluded, meant that the issue had moved into Downs' second stage. Although the surge in coverage occurred in the last half of 1993, the authors point out that the actual ability of most Americans to hook up, access, and use the technologies of the Information Highway were still rather limited. "In other words, the coverage did not spring from a rapid adoption and use of these technologies by the majority of people. Most people had not adopted and couldn't. In many ways, the media are, to paraphrase Lippmann (1922), shining their spotlight on a product that is not accessible to most people."

The present study investigated the following specific questions relating to the cycle of coverage of oat bran and videotex/videotext technologies:

1. What does the cycle of coverage of these two innovations look like over time, and how does coverage between elite (*New York Times, Los Angeles Times, and Washington Post*) differ from that of other major newspapers? Are there commonalities of coverage across different innovations? Is there a predictable pattern of coverage of these issues by elite newspapers compared with other major newspapers?
2. What is the tone of coverage of articles in each of the three time periods (pre-hoopla, hoopla, and post-hoopla)? It was expected that coverage in the hoopla period would be especially optimistic concerning the technology.
3. Where can one find the greatest number of prediction statements about the new technology or innovation? The Hoopla Effect would predict that the greatest number of predictions per article would occur during the Hoopla period, even though the ability to predict accurately would be greatest in the Post-Hoopla period.
4. What types of sources of predictions are most likely to be mentioned in each time period? It was expected that innovation producers and vendors would be most likely to be used as sources during the hoopla period, while research studies by neutral sources such as universities would be found to be more frequent in the pre-hoopla and post-hoopla periods.
5. Is there a difference in length of articles (in words) across the three time periods? Would extensive coverage be associated more with times of great excitement about a new technology, or with times when the greatest amount of research evidence is present?

## Methodology

The Lexis/Nexis database was used to identify articles concerning "oat bran" and videotex/videotext in elite newspapers (*New York Times, Washington Post, and Los Angeles Times*), and other major newspapers (*Atlanta Journal, The Baltimore Sun, The Chicago Tribune, Christian Science Monitor, The Milwaukee Journal, The Louisville Courier-Journal, The St. Louis Post-Dispatch, The Miami Herald, The Kansas City Star,* and *The Wall Street Journal*). Coverage of these two topics in three major news magazines was also examined: *Newsweek, U.S. News and World Report, and Time*. The newspapers and magazines were selected because as a group, they constitute what Stempel and Windhauser (1984) call "the prestige press." The studies by Rogers et al (1991) and Neuman (1990) further divided these media by identifying the *New York Times, Washington Post* and *Los Angeles Times* as elite media.

Any appearance of the keyword in the text or title was counted at a Lexis-Nexis "hit." For the videotex/videotext topic, the search included the time period from Jan. 1, 1979, through Dec. 31, 1996. For oat bran, the search ran from Jan. 1, 1986 through Dec. 31, 1993. After identifying and graphing all eligible articles, articles were divided into the three periods (pre-hoopla, hoopla and post-hoopla). The time period from the beginning date to the point where there was a rapid increase in coverage was the pre-hoopla period. The period in which there was a dramatic rise in coverage was the hoopla period. The point at which coverage declined over two consecutive months from the hoopla peak marked the beginning of the post-hoopla period. Numbers of articles for each topic and the time periods are shown in Figure 1 and Table 1. Data utilizing all articles was used to address the first research question.

To answer the second and third research questions, a content analysis of 30 articles from each time period for each innovation was undertaken. Thus, for oat bran, 30 articles each from the pre-hoopla, hoopla and post-hoopla periods were selected, for a total of 90 articles. Combined with another 90 articles for videotex/videotext, the total number of articles that were content-analyzed was 180. The 30 articles were randomly selected from each time period. One additional criterion was imposed on articles in the random pool for selection for content analysis. Since some articles mentioning "oat bran" or "videotex/videotex" might occur in articles that were not really about these two topics in any important way, the random selection required that there be at least three mentions of the key term in any selected article. For videotex/videotext, only 27 articles in the pre-hoopla period satisified the criteria, so all were selected.

Coding categories for each article included:

- The length of the article in words:
- Number of total predictions made in the article about the innovation . These were further subdivided into (a) personal predictions of the author provided without evidence; (b) predictions that were made based upon some research study. Sources of predictions were also tabulated.
- Sources mentioned in the article (whether or not they were associated with the predictions). Sources included producers, vendors, users, neutral sources such as university researchers and market analysts, and government.
- A judgment by the coder concerning its positive or negative tone with respect to the innovation. The article, taken as a a whole, was rated "all positive" if only positive statements about the innovation appeared; "mainly positive" if it included mostly positive statements but also some negative information; "neutral" if there were no evaluative statements made, or if they were judged to be balanced; "mainly negative" if the article contained mainly negative statements but included some positive statements; and "all negative" if the article contained only negative statements.

## Results

### Research Question 1: Cycle of Coverage in Elite and Other Major Newspapers

Coverage of both oat bran and videotext innovations are presented in two forms: (1) a table shows the number of articles in each of the three periods – Pre-Hoopla, Hoopla, and Post-Hoopla; and (2) A graph shows coverage of each of the topics by month across time. Table 1 shows that almost two-thirds of the articles in both the elite media and other newspapers of the "prestige press" were printed during the Hoopla period. Although this is due in part to the fact that the Pre-Hoopla period (the time before the major news event that led to a spike in coverage) was shorter than the other periods, the overall pattern still shows a concentration during the Hoopla period. Percentages were remarkably similar across innovations, suggesting a general trend. As predicted by Downs (1972), coverage in the Post-Hoopla period did not decline to Pre-Hoopla levels, but did decline substantially from the Hoopla period levels.

**Figure 2**
**Mass Media Coverage of Videotext: 1979-1993**

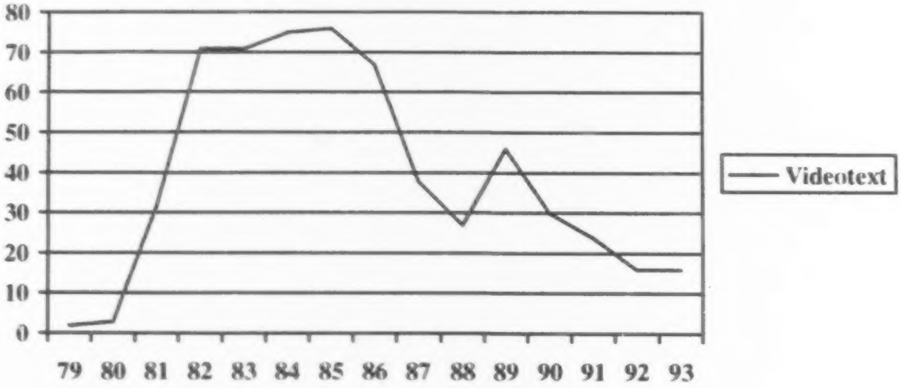


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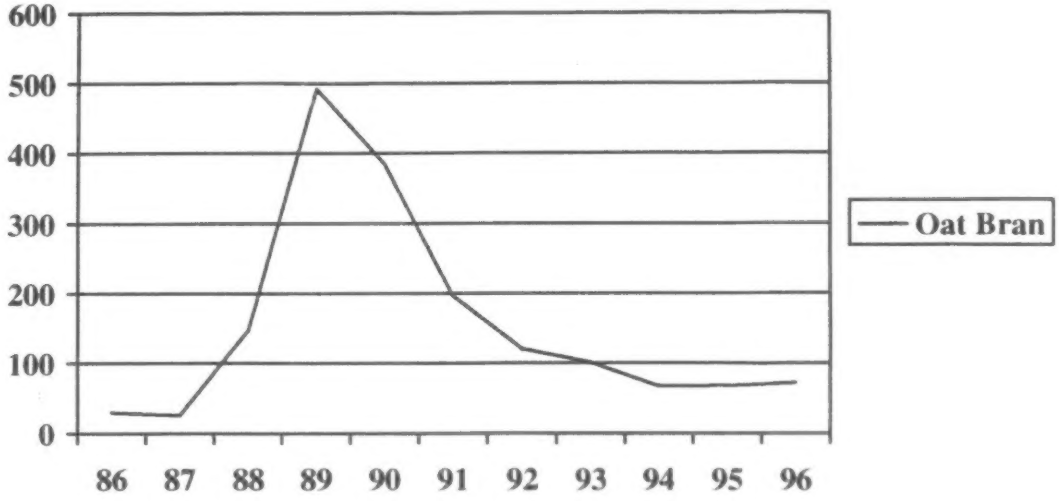
**Figure 3**
**Mass Media Coverage of Oat Bran: 1986-1996**



The graphs (Figures 2 and 3) clearly show that a peak in coverage developed for each innovation. For oat bran, the peak was associated with the publication of the book by Robert Kowalski in 1987, while for videotext it is associated with a series of innovation announcements including the public release of Knight-Ridder's Viewtron experiment in October, 1983. The graph supports the idea of Downs (1972), Rogers et al (1991) and others that coverage comes in peaks linked to events that are important enough to get them on the media and public agendas.

**Table 1**
**Frequency of Articles Concerning Oat Bran by Time Period**
**Elite papers:** New York Times, Los Angeles Times, Washington Post
**Other Papers:** Atlanta Journal, The Baltimore Sun, The Chicago Tribune, Christian Science Monitor, The Milwaukee Journal, The Louisville Courier-Journal, The St. Louis Post-Dispatch, The Miami Herald, The Kansas City Star and The Wall Street Journal plus Newsweek, Time and U.S. News and World Report. (Note: only three articles about the two topics appeared in any of the three news magazines during the period).

**Videotext**

| **Date** | **Period** | **Elite n=** | **Elite %** | **Other n=** | **Other %** |
|---|---|---|---|---|---|
| 1/1/79-12/31/81 | Pre-Hoopla | 28 | 6.6% | 12 | 6.1% |
| 1/1/82 – 12/31/87 | Hoopla | 294 | 69.5 | 129 | 65.5 |
| 1/1/88 – 12/31/93 | Post-Hoopla | 101 | 23.9 | 56 | 28.4 |
| Totals | | 423 | 100 | 197 | 100 |

**Oat Bran**

| **Date** | **Period** | **Elite n=** | **Elite %** | **Other n=** | **Other %** |
|---|---|---|---|---|---|
| 1/1/86 – 12/31/88 | Pre-Hoopla | 116 | 15.2% | 68 | 8.5% |
| 1/1/89 – 12/31/91 | Hoopla | 487 | 64.0 | 493 | 61.5 |
| 1/1/92 – 12/31/96 | Post-Hoopla | 158 | 20.8 | 240 | 30.0 |
| Totals | | 761 | 100 | 801 | 100 |

## Research Question 2: Optimism of Articles in the Hoopla Period.

Overall, there were more optimistic articles than pessimistic ones. Overall results for all articles and both topics are shown below:

| Tone | n | % |
|---|---|---|
| All Positive | 33 | 18.8 |
| Mainly Positive | 49 | 27.8 |
| Neutral | 52 | 29.5 |
| Mainly Negative | 25 | 14.2 |
| All Negative | 17 | 9.7 |

In order to compare tone with time period, the degree of positive or negative tone of the article was rated on a 1 to 5 scale, with 1 being "all positive" and 5 being "all negative." A one-way analysis of variance with a scheffe test was conducted for the combined samples to compare the mean tone of articles by the three periods (Pre-hoopla, hoopla and post-hoopla). Results (Table 2) show that contrary to expectations, the degree of optimism did not peak during the Hoopla stage. Instead, articles were most positive in the pre-hoopla stage and became progressively and significantly more negative through each stage of the process.

Individual analysis of variance tests for each topic (Table 3) showed that the tone of the oat bran articles grew increasingly negative across the three periods, with the pre-hoopla period being significantly different from either the hoopla or post-hoopla periods. However, for the videotex/videotext articles, results were not significant, although the mean scores do decrease (become more negative) across each time period. This could have been due to the fact that there were a number of different videotext experiments, from the British Prestel system to Knight-Ridder's Viewtron experiment. A cross-tabulation comparison for videotext showed that during the hoopla period, there was a bi-modal distribution, with one cluster in the mainly positive group and the other in the all negative group.

It is clear from the analysis that Down's original expectation of a peak in optimism during the hoopla period did not hold for either oat bran or videotext. Instead, the data suggest that even early articles on these two technologies tended to be more optimistic, and that the optimism is tempered over time.

### Table 2
### Optimistic Tone of All Articles by Time Period

One-way analysis of variance of Tone of Article by Time Period with Scheffe test for both Oat Bran and Videotext Articles

| Period | n | Mean |
|---|---|---|
| Pre-Hoopla | 57 | 2.14 |
| Hoopla | 60 | 2.85 |
| Post-Hoopla | 59 | 3.03 |

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 2 | 25.72 | 12.86 | 9.65 | .0001 |
| Within Groups | 173 | 230.46 | 1.33 | | |
| Total | 175 | 256.18 | | | |

The Scheffe test showed Pre-Hoopla is significantly different from both Hoopla and Post-Hoopla at the .05 level. Hoopla is not significantly different from Post-Hoopla.

### Table 3
### Optimistic Tone by Time Period: Separate Comparisons for Oat Bran and Videotext

One-way analysis of variance of Tone of Article by Time Period with Scheffe test

**A. Oat Bran**

| Period | n | Mean |
|---|---|---|
| Pre-Hoopla | 27 | 1.70 |
| Hoopla | 30 | 3.00 |
| Post-Hoopla | 30 | 3.23 |

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 2 | 37.99 | 18.99 | 16.12 | .0000 |
| Within Groups | 84 | 98.99 | 1.18 | | |
| Total | 86 | 136.98 | | | |

The Scheffe test showed that the pre-hoopla mean was significantly different from both the hoopla and post-hoopla means, but the hoopla and post-hoopla means do not differ significantly.

### B. Videotext

| Period | n | Mean |
|---|---|---|
| Pre-Hoopla | 30 | 2.53 |
| Hoopla | 30 | 2.70 |
| Post-Hoopla | 29 | 2.83 |

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 2 | 1.28 | .64 | .469 | .627 |
| Within Groups | 86 | 117.90 | 1.37 | | |
| Total | 88 | 119.19 | | | |

(No Scheffe test was conducted since results above are not significant).

## Research Question 3: Number of Prediction Statements Made

It was expected that the number of prediction statements would peak during the Hoopla Period. Results for all articles across both topics showed that the articles contained fewer specific prediction statements than had been expected. A statement was only counted as a prediction if it made a specific prediction. That is, a statement that videotext will be successful was not treated as a prediction, whereas a prediction that videotext will be in half of American homes by 1990 was taken as a prediction. Below the combined results are shown:

Number of Specific Prediction Statements Made

| Number | Frequency | % |
|---|---|---|
| None | 133 | 75.6 |
| 1 | 27 | 15.3 |
| 2 | 8 | 4.5 |
| 3 | 4 | 2.3 |
| 4 | 2 | 1.1 |
| 5 | 1 | .6 |
| 9 | 1 | .6 |

Total: 176 cases

Because of the low number of cases in which any predictions were made, it was difficult to test the specific hypothesis about the Hoopla Period. A one-way analysis of variance for the combined groups (Table 4) showed that although the mean scores were highest during the hoopla period, the low frequency overall of prediction statements prevented the results from being statistically significant. Individual breakdowns for oat bran and videotext (Table 5) were similar: in both cases the highest mean was during the hoopla period, but results overall were not statistically significant.

**Table 4**
**Number of Specific Predictions by Time Period for All Groups**

One-way analysis of variance: combined groups

| Period | n | Mean |
|---|---|---|
| Pre-Hoopla | 57 | .32 |
| Hoopla | 60 | .57 |
| Post-Hoopla | 59 | .42 |

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 2 | 1.86 | .928 | .813 | .445 |
| Within Groups | 173 | 197.46 | 1.14 | | |
| Total | 175 | 199.31 | | | |

**Table 5**
**Number of Specific Predictions by Time Period for Each Innovation Separately**

**A. Oat Bran**

| Period | n | Mean |
|---|---|---|
| Pre-Hoopla | 27 | .07 |
| Hoopla | 30 | .23 |
| Post-Hoopla | 30 | .07 |

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 2 | .524 | .262 | 1.98 | .144 |
| Within Groups | 84 | 11.08 | .132 | | |
| Total | 86 | 11.61 | | | |

**B. Videotext**

| Period | n | Mean |
|---|---|---|
| Pre-Hoopla | 30 | .53 |
| Hoopla | 30 | .90 |
| Post-Hoopla | 29 | .79 |

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 2 | 2.13 | 1.06 | .542 | .583 |
| Within Groups | 86 | 168.93 | 1.96 | | |
| Total | 88 | 171.06 | | | |

## Research Question 4: Sources of Predictions Associated with Time Periods

In order to determine whether or not there were patterns of sources associated with the Pre-Hoopla, Hoopla and Post-Hoopla time periods, each article was coded for the presence or absence of information from five different types of sources: producers, vendors, users, government and neutral (for example, university researchers or research analysts). Each article was coded '1' if the source was mentioned in the article, and '0' if it was absent.

Results show a definite pattern for both innovations. For the combined table (Table 6), producer and vendor sources are significantly different across the three periods, with the highest appearance of these two sources occurring during the Hoopla period, and the second-highest occurring in the Post-Hoopla period. Government source use did not vary across the three time periods. Mentions of users as sources might be expected to increase across time as there are more users who are adopting, but this was not the case. The percentages actually decline, although not significantly.

The separate tables for oat bran and videotext (Table 7) show that the trend is very similar for each innovation, with statistically significant differences for producers as sources in both cases, and for vendors for videotext. For videotext, there was also a significant increase in the use of neutral sources across time. These results support the idea of Brody (1993), Fidler (1997), and Klopfenstein (1985) that those with a commercial interest in innovations work successfully to publicize them, and that such efforts, along with media interest in new ideas, is a factor in creating the Hoopla Effect.

**Table 6**
**Appearance of Sources in Articles: Combined Results**

| Period | Producer | Vendor | Neutral | User | Government |
|---|---|---|---|---|---|
| **Pre-Hoopla** | 33.3% | 16.7% | 75.0% | 23.3% | 21.7% |
| **Hoopla** | 64.9 | 38.6 | 75.4 | 29.8 | 19.3 |
| **Post-Hoopla** | 57.6 | 33.9 | 89.8 | 16.9 | 22.0 |
| | $\chi^2$=12.9 | $\chi^2$=7.56 | $\chi^2$=5.26 | $\chi^2$=2.68 | $\chi^2$=.15 |
| | p=.002 | p=.023 | p=.07 n.s. | p=.26 n.s. | p=.93 n.s. |

n=176

**Table 7**
**A. Appearance of Sources in Articles: Oat Bran Only**

| Period | Producer | Vendor | Neutral | User | Government |
|---|---|---|---|---|---|
| **Pre-Hoopla** | 11.1% | 7.4% | 92.6% | 37.0% | 22.2% |
| **Hoopla** | 43.3 | 13.3 | 90.0 | 26.7 | 16.7 |
| **Post-Hoopla** | 36.7 | 0.0 | 90.0 | 10.0 | 20.0 |
| | $\chi^2$=7.57 | $\chi^2$=4.16 | $\chi^2$=.14 | $\chi^2$=5.83 | $\chi^2$=.28 |
| | p=.02 | p=.12 n.s. | p=.92 n.s. | p=.054 n.s. | p=.86 n.s. |

n=87

**B. Appearance of Sources in Articles: Videotext Only**

| Period | Producer | Vendor | Neutral | User | Government |
|---|---|---|---|---|---|
| **Pre-Hoopla** | 50.0% | 20.0% | 56.7% | 10.0% | 23.3% |
| **Hoopla** | 86.7 | 66.7 | 63.3 | 33.3 | 20.0 |
| **Post-Hoopla** | 79.3 | 69.0 | 89.7 | 24.1 | 24.1 |
| | $\chi^2$=11.1 | $\chi^2$=18.2 | $\chi^2$=8.4 | $\chi^2$=4.75 | $\chi^2$=.16 |
| | p=.004 | p=.0001 | p=.015 | p=.09 n.s. | p=.92 n.s. |

n=89

## **Research Question 5**: Length of Articles by Time Period

The expectation of this study was that along with a spike in coverage that occurs during the Hoopla period, articles during this period would also tend to be longer, reflecting the result of efforts to promote innovations by various interests and an enthusiasm by media to describe them. It was expected that early articles might be briefer, since little would be known about the innovations at that point, and there would be few adopters. In the third period, it was expected that either the *natural history* cycle of Downs (1972) or the *public arena models* described by Rogers (1991) would lead to a decline in both the numerical frequency and the space allocated to these topics. Article length was measured as the total number of words.

Results were contradictory. For oat bran (Table 8), articles became shorter through the three periods, with the Post-Hoopla period being significantly shorter than the other two. On the other hand, for videotext (Table 9), results showed the opposite – a statistically significant increase in length across time. (Because the two innovations show opposite trends, a combined table is not shown, as the results would not be meaningful). Results suggest that contrary to expectations, the Hoopla Period may not be associated with longer articles – they were not longer during this period for either innovation. There may be other factors that determine length of articles since there was no common trend.

**Table 8**
**Article Length by Time Periods for Oat Bran**

One-way analysis of variance with Scheffe test

| Period | n | Mean Words |
|---|---|---|
| Pre-Hoopla | 27 | 1483.7 |
| Hoopla | 30 | 1089.8 |
| Post-Hoopla | 30 | 625.8 |

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between groups | 2 | 10,523,257 | 5,261,628 | 10.51 | .0001 |
| Within Groups | 84 | 42,047,580 | 500,566 | | |
| Total | 86 | 52,570,837 | | | |

The Scheffe test showed the Post-Hoopla mean was significantly different from both the Pre-Hoopla and Hoopla means at the .05 level. The Pre-Hoopla and Hoopla means were not significantly different.

**Table 9**
**Article Length by Time Periods for Videotext**

One-way analysis of variance with Scheffe test

| Period | n | Mean Words |
|---|---|---|
| Pre-Hoopla | 30 | 752.9 |
| Hoopla | 30 | 773.1 |
| Post-Hoopla | 29 | 1146.5 |

| Source | D.F. | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|---|---|---|---|---|---|
| Between Groups | 2 | 2,881,477 | 1,440,738 | 3.35 | .040 |
| Within Groups | 86 | 37,018,141 | 430,443 | | |
| Total | 88 | 39,899,618 | | | |

## Discussion and Conclusions

The purpose of this paper has been to explore the possibility of a general theory of media coverage which we have named the Hoopla Effect for innovations in a wide variety of areas. Building upon studies in a number of health and computer technology areas, we predicted along the lines of Downs (1972) and others that there would be a predictable general pattern of coverage of these innovations. We also expected that there would be a number of other general characteristics of the coverage, including:

- Greater coverage of these innovations in elite media than in others, and a tendency for non-elite media to focus coverage in the Hoopla period rather than evenly across time;
- A particularly positive or optimistic tone of articles in the Hoopla Period as compared to coverage in the Pre-Hoopla or Post-Hoopla periods, and perhaps the most negative coverage in the Post-Hoopla period.
- The most statements of specific predictions in the Hoopla period, when optimism is expected to be at its highest;
- The greatest use of sources such as producers or vendors that have a self-interest in product promotion during the Hoopla period, with higher levels of government and neutral (university researchers) in the Pre-Hoopla or Post-Hoopla periods.
- Longer articles (as measured in number of words) during the Hoopla period, when the combination of efforts to promote and media receptivity would be expected to result in the use of longer articles.

For both the health innovation – the use of oat bran to lower cholesterol – and the computer innovation – the use of videotext technologies – the pattern of coverage shows a definite spike in coverage across time. For oat bran, this was associated with the publication of Robert Kowalski's book on oat bran in March, 1987. For Videotext, it can be related to several innovations, including the public release of Knight-Ridder's Viewtron system in October, 1983. Slightly less than two-thirds of all articles on both subjects were printed during the Hoopla period. As Rogers et al (1991) have noted, "re-making" of an innovation via a new news development may result in more than one Hoopla period. Such spikes of coverage would be expected to focus public attention on these topics, as agenda-setting would suggest.

Comparisons of coverage by *The New York Times, Los Angeles Times,* and *Washington Post* with that of the other major daily newspapers did not show any major differences. Although it had been expected that coverage might be more even for the top elite media and more focused during the Hoopla period for the others, the data suggest that all of the "prestige press" newspapers covered these two topics in about the same way. It may be possible that smaller circulation newspapers could have a different pattern, but this was not tested in this study. The three major news magazines included only three articles on either topic, so no analysis of patterns of coverage was possible for them.

The second expectation, that coverage would be most optimistic during the Hoopla period, needs to be revised in light of findings. Results for both innovations shows that coverage begins optimistically, and declines in optimism across the Hoopla and Post-Hoopla periods. Thus, it may be that the "blue sky" optimism that Downs predicted for the second stage is also very likely to occur in the first stage for innovations of the type studied for this paper. Downs was concerned about media coverage of environmental issues, and coverage may be different for them.

The third expectation, that the number of specific predictions would be expected to peak during the Hoopla period, was difficult to test since the overall number of such specific predictions was low throughout all the articles for both innovations. The data suggest the possibility that this expectation could be correct, since the mean score for the Hoopla period is the highest for both innovations. However, without studying additional cases, this expectation cannot be confirmed or rejected.

The fourth expectation, predicting a peak of producers and vendors as sources during the Hoopla period, was supported. For both innovations, producers are used as sources most often during the Hoopla period. Interestingly, users, who would be expected to become more numerous over time, were not used more frequently as time passes. Government sources tended to be stable across the three time periods, but overall at levels far below producers.

The final expectation concerning length of articles showed contradictory results, with average length declining over the three periods for oat bran and increasing over time for videotext. One can only conclude at this point that the Hoopla period does not seem to be the location for longer articles. The reason for the difference between innovations would require additional study.

Based upon this research, the idea of a general cycle theory of mass media coverage of innovations of many types remains plausible, but needs further investigation. Rather than focusing on case studies of a particular innovation, as has been the case in many previous studies, more cross-innovation studies are needed. Once general patterns can be documented, the impacts of the cycle on agenda setting, knowledge gaps, and other media effects can be explored. Qualitative studies of the actual predictions printed during the three periods, or links between the predictions and sources, would also contribute to improved understanding of how the cycle works.

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# Predicting Online Service Adoption Likelihood Among Nonsubscribers

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## ABSTRACT

### Predicting Online Service Adoption Likelihood Among Nonsubscribers:

As we approach the dawn of the digital television revolution, the convergence between television and online services continues to progress along technological as well as content dimensions. With further erosion of the television audience on the horizon, it is speculated that PC-TV use will one day displace traditional TV use. This study investigates the relations between perceived television use and online access motives among non-online subscribers--the audience segment that is being courted by the online industry, and how such relations influence the likelihood of online service adoption.

# Predicting Online Service Adoption Likelihood Among Nonsubscribers

As we approach the dawn of the digital television revolution, the convergence between television and online services continues along technological as well as content dimensions. Resulting from this inevitable transition is a further erosion of the television audience, as evidenced by the dwindling primetime television audience share generated by all six broadcast networks, which dipped to 42.8% in 1997 from 47.6% in 1995 (Nielsen Media Research, 1997a).

Concerns regarding this potential media substitution phenomenon have prompted expert predictions that online or PC-TV services would eventually replace regular television services, due to their added interactive capabilities. These predictions, although not completely speculative, seem to rest on one or both of the following assumptions: (1) television and online content is mutually substitutable, and (2) television use motives are similar to online service use motives.

It's reasonable to assert that certain aspects of the online content do emulate television content and such emulation will rise as the PC-TV phenomena grows. However, whether audience television use motives parallel those of online service use remains a mystery.

This study intends to investigate that relationship among non-online subscribers--the audience segment that is being intensely courted by the online industry. Specifically, it attempts to explain whether these two sets of motives are indeed substitutable and, if so, how they each may influence the perceived likelihood of online service adoption.

## Uses and Gratifications Perspective

The uses and gratifications perspective is considered one of the most appropriate theoretical frameworks to study psychological and behavioral tendencies in association with mediated communication (Lin, 1996). As echoed by others, this particular theoretical approach is also well-suited for studying computer mediated communication such as Internet use (e.g., Kuehn, 1994; Morris & Ogan, 1996; Rafaeli, 1986; Newhagan & Rafaeli, 1996).

However, while mediated communication such as television viewing has been widely examined under the uses and gratifications paradigm, computer-mediated communication--such as online service use on the Internet--demands renewed theoretical attention as well as empirical effort (Morris & Ogan, 1996).

In the tradition of uses and gratifications research, audience media use is said to be associated with a set of psychological motives. These psychological motives motivate the audience to purposefully select certain media and media content for consumption in order to satisfy a set of psychological needs behind those motives (e.g., Blumler, 1979; Katz, Blumler & Gurevitch, 1974).

Under this theoretical umbrella, television viewing motives --such as surveillance, entertainment, personal identity, escape and companionship (e.g., Rubin, 1981, 1983)--have been empirically linked with distinct channel selection decisions and viewing content choices as well as varying viewing levels and viewing gratifications-obtained (e.g., Levy & Windahl, 1984; Palmgreen, Wenner & Rosengren, 1985). These audience behaviors in essence point to a relatively utility- or goal-oriented active viewing public (e.g., Levy & Windahl, 1984; Rubin & Perse, 1987).

In contrast, parallel past empirical findings have also established the relationship between audience computer-mediated communication behavior and the uses and gratifications approach. For instance, a study of electronic political bulletin boards in 1986 (Garramone, Harris & Anderson, 1986) indicates that the need for surveillance, personal identity and diversion all equally contributed to electronic political bulletin board use.

Nearly a decade later, James, Worting and Forrest (1995) found that the most cited psychological motives for using electronic bulletin boards include informational learning and socialization. Other relevant studies found, for instance, that surveillance needs are a strong predictor of potential adoption of news and information services via a videotext system (Lin, 1994a).

As little empirical research has addressed the topic of online service uses and gratifications (in the Internet environment), a recent industry study nevertheless indicates that online audience activity is motivated by seeking gratifications in escape, entertainment, interaction and surveillance (Miller, 1996). In addition, Jeffres and Atkin (1996) reported that Internet adoption intention was predicted by needs for communication. Moreover, Eighmey (1997) discovers both entertainment value and personal identity (or personal involvement and relevance) are the strong motivational factors behind commercial web site adoption (1997).

The summative findings gathered from the literature herein imply that the basic audience motives for seeking either traditional mediated content or online content are similar. As stated earlier, online content does emulate (and perhaps even extend) traditional mediated content. It is logical, then, to expect that perceived audience motives for traditional mediated content use and online service use may both be potential antecedent variables to likely online service adoption.

H1: Perceived motives for television use will be positively related to perceived motives for online service use.

H2: Perceived motives for television use will be positive predictors for online service adoption likelihood.

H3: Perceived motives for online service use will be positive predictors for perceived online service adoption likelihood.

## Media Substitution Hypothesis

According to the media substitution hypothesis, audience members may substitute the use of a functionally similar medium for another when such a substitution need arises and the circumstance presents itself. The classic example for this type of media substitution dynamic reflects the displacement of radio by television as the most widely adopted mass entertainment medium (Laswell, 1948). The more recent substitution model, for instance, characterizes prerecorded video playbacks on a VCR as a replacement for movie-outing activity (e.g., Childers & Krugman, 1987; Henke & Donohue, 1989; Lin, 1993), as such home video entertainment activity provides better audience control over the household budget and leisure-time allocations.

Such a media substitution mechanism is not often so transparent between other functionally similar media, however. This is especially true between traditional mediated and computer-mediated communication channels, even when the channels under comparison provide similar content.

For instance, audience use of on-line services was found to have little effect on their patronage of television, newspapers and other traditional news sources (Jessell, 1995). Jeffres and Atkin (1996) also failed to find any significant correlations between interest in using online services on the Internet and other traditional mass media. A recent national survey reported that the percentage of people who preferred to consume traditional mass media instead of getting on line ranged from 70% to 77% (Snider, 1997). Contrastingly, other studies report a slight reduction of television viewing time among online users (e.g., Berniker, 1995; Crispell, 1997).

This lack of apparent substitution mechanisms between traditional media and online service use seems to signal additional audience media choice models. That is, between any two media choices, there could exist a displacement (or substitution), complementary or supplementary relationship.

As discussed above, a displacement relation illustrates a mutually exclusive opportunity for audience choice between two media. A complementary relation, on the other hand, reflects a situation where the use of one medium makes the utility of another medium more complete. For instance, newspapers and television were perceived as functional complements in that television was seen as a medium for fulfilling a general surveillance need, while newspapers were deemed a tool for specific information seeking, knowledge acquisition and election education (Weaver & Budeenbaum, 1979). By the same token, as the VCR allows for time-shifting of television program viewing, the VCR complements the television viewing experience (Lin, 1993).

In contrast, as online service use has not yet impacted the level of traditional media use at a noticeable level (e.g., Jessel, 1995), usage patterns between the two media may be considered largely orthogonal at this point in time. Thus, online content can be regarded as a functional supplement to traditional mediated content. As such, online content access enhances or enriches the traditional mediated content consumption experience.

The onset of this supplement, complement or displacement mechanism should depend on whether "new media" can effectively compete with "old media" for cost-efficiency, perceived communication utilities and gratification expectations that concern the user at a sufficient level (Lin, 1994). At this particular juncture, it appears that online services are not yet effectively competitive against the more established traditional mediated channels in any of those categories. However, it should also be recognized that audience leisure time is a property of fixed avail. Much like the home video competition with both TV viewing and movie-going activity (Lin, 1993), the more leisure time the audience devotes to online access, the less of such time will be allocated to TV viewing and vice versa. Since this competitive dynamic is likely to become the trend rather than mere speculation, the following hypothesis is posited:

H4: Level of television use will be unrelated or inversely related to perceived level of online service use.

## Research Methods and Procedures

A telephone survey utilizing the computer-aided telephone interview (CATI) system was conducted for data collection during the spring of 1996. Random digits were generated to compose the telephone survey sample. The survey area covered a geographic region rich in ethnic diversity, with a population base close to 2 million. Overall, 348 completed surveys were gathered, reflecting a 60% response rate.

### Sample Profile

The present sample's personal computer ownership was at 36% in 1996, compared with 37% national penetration (Sandberg, 1997). The average ownership duration for PCs was 4.34 years. Respondent average media use frequencies reflect: (1) 3.5 hours of daily TV viewing, (2) 2.9 hours of daily radio listening, (3) 4.4 days of newspaper reading during the week, and (4) 2.5 days of magazine reading during the week. Other sample SES indicators show that (1) mean age is around 40, (2) average annual household income is $40,000 and (3) the mean education level is "some college". The sample gender split is 43% males and 57% females. While 47% of the sample have children; an average family has 2 children.

## Definitions

Perceived Television Use Motives. Respondents were asked to rate how often they engage in television viewing for a series of 18 psychological motives. A five-point Likert scale, ranging from "very often" to "never," was used. These items were adapted from past uses and gratifications studies (e.g., Rubin, 1981, 1983). Factor analysis (with Varimax rotation) employed to find variable groupings yielded three final three factors with acceptable inter-item reliability coefficients, including Surveillance, Escape/Companionship and personal identity--with Cronbach's alphas reaching .86, .76 and .88, respectively (see Table 1).

Perceived Online Service Use Motives. Respondents were asked to assess their potential online service use motives based on the 18 psychological motive items given, after explanations were provided for the function and content of the online use phenomenon. These items, worded in a similar fashion to those of the television use motive items, were measured by a five-point Likert scale, ranging from "very likely" to "very unlikely." The factor analysis procedure (with Varimax rotation) resulted in three final factors: Surveillance, Escape/Companionship/Identity and Entertainment--with Cronbach's alphas at .88, .91 and .88, in that order (see Table 2).

Perceived Online Service Adoption Likelihood. Altogether, 23 categories of regular online service features were ranked by respondents in terms of their perceived adoption likelihood. A five-point Likert scale, ranging from "very likely" to "very unlikely", was used to gauge responses. Three final online service adoption likelihood groupings were generated via factor analyses (with Varimax rotation), including Shopping services, Information services and Infotainment services--with corresponding Cronbach's alphas of .86, .89 and .89 (see Table 3).

Television Use Level. Television viewing was measured by asking the respondent to report the number of hours spent watching television on a weekday and on a weekend. The average for the sum of weekday and weekend viewing hours was obtained to reflect television use level.

## Findings

The Pearson Correlation results (Table 4) revealed that six out of nine correlation coefficients--pairing perceived TV use and online service use motives--are statistically significant. In particular, as perceived Entertainment and Escape/Companionship motives for TV use are not related to the perceived online Surveillance motives, the latter is unrelated to perceived TV Escape/Companionship/Identity motive. Based on these findings, Hypothesis one is thus partially supported.

Table 5 presents the hierarchical multiple regression results for three different equations. The first equation, featuring perceived adoption likelihood for Infotainment services as the criterion variable, reveals that all perceived online service use motives are significant predictors, while the same is not true for all perceived TV use motives. Overall, 45% of the variance is explained by the equation, with perceived TV use motives accounting for a meager 1% of that variance. Beta values for perceived online service motives are .35 for Surveillance motives, .23 for Escape/Companionship/Identity motives and .19 for the Entertainment motive.

The equation predicting adoption likelihood of Information services accounted for 49% of the variance in the criterion variable; perceived TV use motive measures are responsible for 2% of the total variance explained. Significant predictors include perceived Surveillance ($\underline{B}$ = .32), Escape/Companionship/Identity ($\underline{B}$ = .26) and Entertainment ($\underline{B}$ = .24) motives for online service use as well as an inversely related perceived Identity ($\underline{B}$ = -.11) motive for TV use.

The third equation yielded a robust 64% of variance explained for the criterion variable, Shopping service adoption likelihood. As none of the perceived TV use motives are significant predictors for the equation, they help account for 1% of the total variance explained. All three perceived online service use motives are significant predictors, namely, Entertainment ($\underline{B}$ = .28), Surveillance ($\underline{B}$ = .27) and Escape/Companionship/Identity ($\underline{B}$ = .19) motives.

By summing up these findings, it is apparent that H2 is not supported by the analyses, as only one perceived TV use motive is significantly predictive of perceived online service adoption likelihood. Alternatively, H3 is supported by the data, as all perceived online service use motives are significant predictors for all three multiple regression equations.

Table 6 illustrates the results from a Multidimensional

Scaling procedure. While the overall $R^2$ value reaches .952 and the Kruskal's stress measure is at .112, it is apparent that the two-dimensional model describes the relative perceptual distances between all variables in the model almost perfectly. As demonstrated by Figure 1 and Figure 2, perceived TV use motives are clearly distant from the dimension which is clustered with perceived online service use motives and online service adoption likelihood.

Finally, with regard to the relationship between the level of TV use and perceived likely online utility (see Table 4), the only significant but inverse correlation exists between TV use level and perceived Information service use ($r = .11$, $p \leq .05$). Hypothesis 4 is thus supported by these findings.

## Discussion

The significant but moderate empirical parallel found between perceived motives associated with the use of both television and likely online access helps validate the theoretical assumption that audience media use motives are often similar, even between traditional mediated and computer-mediated communication channels (see Table 4). The only insignificant correlations between perceived TV and perceived online use motives involve the perceived Surveillance motives for both TV and online access, as the latter appears to be relevant only for the former, or the Identity-seeking motive for TV use. Overall, these findings suggest that those who are compelled by a set of psychological motives to seek certain cognitive, affective or behavioral gratifications from TV viewing may also be prompted by similar motives--including "entertainment"--from a computer-mediated source such as the online universe.

This assessment can be further examined to explicate a surprise finding obtained through the factor analysis procedure, which fails to generate the traditional "entertainment" dimension of TV use motive (excluded from further analysis) with sufficient scale reliability (Cronbach's alpha=.66). By contrast, the perceived "entertainment" motive for online use is a solid factor with high scale reliability (Cronbach's alpha=.88). Could this be emblematic of the changing nature of audience TV viewing motives, such that the audience no longer considers TV viewing a strong source for "pure entertainment"? In this rapidly expanding multichannel viewing universe--where the average cable TV system now carries between 75 and 80 channels and around 52 million people in the U.S. are Internet users in 1997 (Nielsen Media Research, 1997b)--the answer to this question remains unclear.

These ambiguous relations between the audience, their TV viewing and likely online service adoption activity are further complicated by the intriguing results from the multiple regression tests. While all three perceived TV use motives are significantly but weakly correlated with either one or two types of likely online service adoption, and even though most similar perceived psychological motives for TV use and online access are intercorrelated, those motives associated with TV use are nevertheless largely insignificant predictors for likely online service adoption (see Table 5).

The only exception involves the Identity-seeking motives for TV use, which is a significant but negative predictor for likely adoption of Information services. This finding contradicts Garramone, Harris and Anderson's (1986) discovery of a strong association between personal identity needs and the interactive nature of political bulletin board use, as the former is inversely related to online content of a more impersonal business nature.

Nonetheless, all three perceived online use motives are strong and significant predictors for likely adoption of all three online service groupings. It is then reasonable to assert that these online services are being perceived by those non-online subscribers as a source potentially capable of meeting their psychological needs for entertainment, surveillance, escape, companionship and personal identity.

It is perhaps not difficult to have fostered that positive perception for potential online content access, if one examines both the "brand identity" and "brand equity" of online media that has been perpetuated by--ironically enough--the traditional media. For the average person, the "brand identity" of the online universe represents universal interconnectivity, versatility and infinite breadth and depth of content substance (Miller, 1996). As for the perceived "brand equity" of the online medium, it also rides high in the public mind as an infallible source for information, entertainment and interpersonal communication utilities (e.g., Tetzeli, 1994).

More importantly though, the patterns of merged dimensions among perceived online access motives are perhaps a finding worthy of further theoretical exploration. Traditional media use motives typically encompass most of the following unique but intercorrelated dimensions--entertainment, escape (or diversion), personal identity, surveillance, information learning, parasocial communication and companionship (Rubin, 1983). The perceived online access motives clustered from the present data, however, collapse them into a smaller number of multidimensional composites. In the case of escape, companionship and personal identity motives, a side by side comparison of these two sets of perceived motivational dimensions shows that--while the former two motives are fused into a single perceived TV use motive--all three motives are conjoined to form a converged perceived online access motive.

It is possible that the online access process as an interactive activity evokes the perception of a medium associated with the more "intimate" feeling of personal physical "connection." Moreover, the medium's ability to furnish the audience the ultimate control over its interactive process for online content access--which could be a rather daunting task in itself--may also help stipulate an emotional "bond" in the audience with the medium. This intimate personal connection and emotional bond then may be cultivated into a personal identity with the interactive process which intrinsically defines the medium itself.

To further dissect this somewhat curious phenomenon, one can consider the parallel between shopping via television channels versus online channels. Where home shopping services on television may be linked to audience motives of seeking companionship, escape and even parasocial gratifications (e.g., Grant, Guthrie & Rokeach, 1991), online shopping services, however, may be linked to additional motives such as surveillance or even personal identity. This is because online shopping services tend to be a repository of new, fashionable and/or specialized products or services. While online shoppers display the tendency to browse and screen these more innovative products, online shopping activity itself can be interpreted as either a conscious or unintended status-conferral act (Miller, 1995). The majority of online shoppers, according to that same work, are typically men who order technology or finance oriented products or services and who tend to strongly identify with the brand equity of those products and services (e.g., Hawkins, 1944; Miller, 1996).

With this perceived versatility of online services in mind, online services--a relatively nascent medium in structural developmental terms--is far from being seen as the designated successor to the dominant storyteller and master marketer of our time, television. As confirmed by the test results of Hypothesis 4, the presumed "supplement" function of online services in relation to television use is supported. This finding hence helps affirm past study evidence which, on the one hand, negates the displacement function of online services over traditional mediated communication use (e.g., Jessell, 1995), and on the other, embraces the supplementary relationship from online services to the ubiquitous television medium (e.g., Berniker, 1995; James, et. al., 1995).

The supplementary mechanism of online service access in relation to television use, as validated here, provides a rather succinct theoretical exposition for the parallel but distinct nature of a new versus an old medium. It is difficult to surmise when exactly such a relation between online service access and television use would, instead, be transformed into an emulated version of either a complementary or displacement mechanism. The conditions on which these transformations may take place, however, can be envisioned. For this particular shift of technology paradigm to occur, online content of interest to an average TV audience would have to become as attractive as conventional TV content, and online access would also need to be as cost- and energy-efficient as TV viewing access.

Lastly, the perceptual mapping results (see Table 6, Figure 1 and Figure 2) illustrated a near perfect description for the attitudinal distances of perceived TV use motives, perceived online access motives and perceived online service adoption likelihood. As perceived TV use motives spread across in a separate vertical dimension from perceived online access motives, they also stretch into rather distant locations from perceived online access motives in the horizontal dimension. These results then further evidence the validity of the theoretical assumptions forwarded in this study, and in particular, the respective multiple regression models.

## Conclusion

While the present study is successful in examining online service adoption likelihood within the uses and gratifications framework, it lends further credence to the utility of this theoretical perspective in investigating computer-mediated communication (Kuehn, 1194; Morris & Ogan, 1996; Rafaeli, 1986; Newhagen & Rafaeli, 1996). The theoretical parallel found between perceived motives for TV use and online access, supported by the relatively weak to moderate empirical evidence, points to the following several conclusions.

Audience motives for media use decisions could be similar across both new and old media modalities--such as the television and online media. However, in spite of the similarities, these motives are perceptually distinct from each other when media adoption decisions are made, as each set of these motives is invariably linked to a specific type of likely media adoption choice. This specific media adoption choice is inherently dictated by the nature of the media technology in question, as envisaged by the audience. In essence, the non-interactive versus interactive communication nature of television and the online medium helps delineate the unique perceptual dimension associated with the perceived audience media use motives.

This lack of unidimensional perception in media use motives is further reflected by the supplementary relation from the online medium to the television medium. What challenges this relational presumption is the anticipated arrival of digital television, a media modality which intends to fashion itself into a sort of TV-PC service in the near future. Meanwhile, the forthcoming PC-TV may also rival both TV-PC and online services for audience adoption preference. When and if both TV-PC and PC-TV become a viable media choice for the audience, what would then be the technical and perceptual definitions for television and online services and what would their relations become?

It is more than apparent that a great deal of research energy and theorizing effort will be needed to disentangle this complex "web" of new media with interchangeable technical traits but distinct content characteristics. This perplexity notwithstanding, the research challenges ahead also provide the impetus for studying the changing nature of mediated communication, an ever increasing part of our human communication infrastructure.

Table 1 Factor Analysis for Perceived Television Use Motives

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 |
|---|---|---|---|---|---|
| Entertainment | | | | | |
| Fun | | | | .81 | |
| Entertainment | | | | .82 | |
| Excitement | | | | .57 | |
| Relaxation | | | | .49 | |
| Surveillance | | | | | |
| Local News | .77 | | | | |
| National News | .92 | | | | |
| World News | .89 | | | | |
| Intellectual Growth | .52 | | | | |
| Escape/Companionship | | | | | |
| Kill Time | | | .69 | | |
| Companionship | | | .75 | | |
| Boredom Relief | | | .78 | | |
| Forget Problems | | | .56 | | |
| Reality Escape | | | .43 | | |
| Problem Solving | | | | | |
| Solve Problems | | | | | .68 |
| Learn Skills | | | | | .79 |
| Personal Identity | | | | | |
| Belief Identity | | .84 | | | |
| Attitude Identity | | .88 | | | |
| Behavior Identity | | .85 | | | |
| % Variance Eigenvalue | 25 | 15.1 | 9.5 | 7.2 | 6.8 |

Table 2 Factor Analysis for Perceived Online Access Motives

| Variables | Factor Loadings<br>1 | <br>2 | <br>3 |
|---|---|---|---|
| Escape/Companionship/ Identity | | | |
| Seek Companionship | .74 | | |
| Relief Boredom | .67 | | |
| Solve Problem | .66 | | |
| Forget Problems | .79 | | |
| Escape Problems | .67 | | |
| Relax | .60 | | |
| Chat On Line | .51 | | |
| Make Friends On Line | .54 | | |
| Surveillance | | | |
| Get Local News | | .79 | |
| Get National News | | .86 | |
| Get World News | | .85 | |
| Enhance Intellectual Growth | | .59 | |
| Entertainment | | | |
| Have Fun | | | .78 |
| Find Excitement | | | .77 |
| Be Entertained | | | .78 |
| Variance Explained | 52% | 10% | 7% |
| Eigenvalue | 8.2 | 1.7 | 1.1 |

Table 3 Factor Analysis For Likely Online Service Adoption

| Variables | Factor Loadings<br>1 | <br>2 | <br>3 |
|---|---|---|---|
| Shopping Services | | | |
| General Merchandise Orders | | | .74 |
| Grocery Orders/Delivery | | | .79 |
| Restaurant Reservation/Delivery | | | .76 |
| Travel Reservation | | | .53 |
| Entertainment Ticket Reservation | | | .55 |
| Information Services | | | |
| Electronic Mail | .52 | | |
| Yellow Pages | .67 | | |
| Taxes | .55 | | |
| Banking | .61 | | |
| Financial Market | .69 | | |
| Library Search | .81 | | |
| Encyclopedia | .73 | | |
| Infotainment Services | | | |
| Newspapers | | .59 | |
| Magazines | | .62 | |
| Television News | | .75 | |
| Sports News/Information | | .65 | |
| TV Program/Content Guide | | .72 | |
| Movie News/Reviews | | .74 | |
| Weather Forecasts | | .58 | |
| Retail Ads | | .55 | |
| Variance Explained | 49.1% | 6.8% | 6.1% |
| Eigenvalues | 10.2 | 1.5 | 1.3 |

Table 4 Zero-Order Correlations between Perceived Motives for TV Use and Online Service Use, TV Use level and Likely Online Service Adoption

| | Likely Online Service Adoption | | | Perceived Online Access Motives | | |
|---|---|---|---|---|---|---|
| | Shopping | Information | Infotainment | Entertainment | Surveillance | Escape/ Companionship/ Identity |
| Perceived TV Use Motives | | | | | | |
| Surveillance | .06 | .11* | .03 | -.03 | .23** | -.01 |
| Identity | .14* | .07 | .17** | .18* | .23** | .29** |
| Escape/ Companionship | .17** | .03 | .20** | .25** | .07 | .35** |
| TV Use Level | -.07 | -.11* | -.02 | -.03 | .14** | .16** |
| Perceived Online Access Motives | | | | | | |
| Entertainment | .58** | .59** | .58** | -- | -- | -- |
| Surveillance | .54** | .60** | .59** | -- | -- | -- |
| Escape/ Companionship/ Identity | .58** | .59** | .58** | -- | -- | -- |

* represents two-tailed significance level p < .05.
** represents two-tailed significance level p < .01.

Table 5 Multiple Regression Analysis for Predicting Likelihood of Online Service Adoption

| | **Media Services** | | **Information Services** | | **Shopping Services** | |
|---|---|---|---|---|---|---|
| Predictor Variables | Beta | p | Beta | p | Beta | p |
| Perceived Online Access Motives | | | | | | |
| Entertainment | .19 | .005 | .24 | .002 | .28 | .0001 |
| Surveillance | .35 | .000 | .32 | .000 | .27 | .0001 |
| Escape/ Companionship/ Identity | .23 | .001 | .26 | .0001 | .19 | .009 |
| **Multiple R** | .665 | .000 | .69 | .000 | .63 | .000 |
| **$R^2$ Change** | .44 | .000 | .47 | .000 | .40 | .000 |
| Perceived TV Use Motives | | | | | | |
| Identity | -.04 | .43 | -.11 | .03 | -.06 | .23 |
| Surveillance | -.05 | .33 | .06 | .21 | .02 | .66 |
| Escape/ Companionship | .06 | .27 | -.06 | .26 | .03 | .63 |
| **Multiple R** | .67 | .000 | .70 | .000 | .64 | .000 |
| **$R^2$ Change** | .01 | .000 | .02 | .000 | .01 | .000 |
| **Final $R^2$** | .45 | .000 | .49 | .000 | .64 | .000 |

Table 6 MDS Concept Coordinates for All Variables

| | **Dimension1** | **Dimension2** |
|---|---|---|
| Variables | Online | Television |
| Likelihood of Online Access | | |
| Shopping Services | .91 | -.06 |
| Information Services | .98 | -.36 |
| Media Services | .85 | .13 |
| Perceived Online Access Motives | | |
| Entertainment | .78 | .45 |
| Surveillance | .53 | -.63 |
| Escape/ Companionship | .42 | .60 |
| Perceived TV Use Motives | | |
| Surveillance | -1.34 | -2.06 |
| Identity | -1.78 | .51 |
| Escape/ Companionship | -1.34 | 1.43 |

Stress = .112
$R^2$ = .952

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| Perceived TV Use Motives | | |
| Surveillance | -1.34 | -2.06 |
| Identity | -1.78 | .51 |
| Escape/ Companionship | -1.34 | 1.43 |

Stress = .112
$R^2$ = .952

Figure 1 Derived Stimulus Configuration Plot

Dimension 1 (Horizontal) Vs Dimension 2 (Vertical)

```
      -+----+----+----+----+----+----+----+----+----+----+-
      :                         :                         :
 2.1 -+                         :                         +
      :                         :                         :
      :                         :                         :
      :                         :                         :
      :            9            :                         :
      :                         :                         :
 1.0 -+                         :                         +
      :                         :                         :
      :                         :                         :
      :       8                 :   6   4                 :
      :                         :                         :
      :                         :       3                 :
 0.0 -+----------------------------------1----------------+
      :                         :                         :
      :                         :         2               :
      :                         :                         :
      :                         :    5                    :
      :                         :                         :
-1.0 -+                         :                         +
      :                         :                         :
      :                         :                         :
      :                         :                         :
      :                         :                         :
      :                         :                         :
-2.1 -+            7            :                         +
      :                         :                         :
      -+----+----+----+----+----+----+----+----+----+----+-
     -2.5      -1.5      -0.5       0.5       1.5       2.5
```

*Plot Symbol:

1 - Shopping Service Adoption Likelihood
2 - Information Service Adoption Likelihood
3 - Infotainment Service Adoption Likelihood
4 - Perceived Entertainment Motive for Online Access
5 - Perceived Surveillance Motive for Online Access
6 - Perceived Escape/Companionship/Identify Motive for Online Access
7 - Perceived Surveillance Motive for TV Use
8 - Perceived Personal Identity Motive for TV Use
9 - Perceived Escape/Companionship Motive for TV Use

Figure 2 Scatterplot of Linear Fit

```
SCATTERPLOT (PLOT OF LINEAR FIT):
        DISTANCES (VERTICAL) VS DISPARITIES (HORIZONTAL)
      -+----+----+----+----+----+----+----+----+----+----+-
 3.8 -+                                                   +
      :                                                   :
      :                                             X     :
      :                                                   :
      :                                            X      :
      :                                          XX       :
 3.0 -+                                       XX          +
      :                                      X X          :
      :                                   2 X  X          :
      :                                X XX X             :
      :                                                   :
      :                               XX                  :
 2.2 -+                             X                     +
      :                          X                        :
      :                                                   :
      :                                                   :
      :                                                   :
      :                                                   :
 1.3 -+            X                                      +
      :           X  X                                    :
      :                     X                             :
      :            2 X                                    :
      :               X                                   :
      :             X                                     :
 0.5 -+X          XX                                      +
      : 2           X                                     :
      :      X                                            :
      -+----+----+----+----+----+----+----+----+----+----+-
      0.0       0.7       1.5       2.2       3.0       3.7
```

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# Evidence for selective perception in the processing of health campaign messages

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# Evidence for selective perception in the processing of health campaign messages

## Abstract

This study tested the psychological mechanism that operates in audiences' processing of health or safety campaign messages, specifically selective perception vs. perceptual defense. Three different surveys conducted in two Midwestern states between 1995 and 1997 provided consistent evidence for the operation of selective perception, especially in regards to messages that don't call for radical changes in behavior. The study has both theoretical and practical implications for the understanding and design of health and safety campaigns.

## Introduction

This paper presents and analyzes the results of three different studies that consistently lend support to the hypothesis that selective perception is the operating mechanism in audiences' processing of health campaign messages from the media. The paper relies on data from extensive survey research conducted in two Midwestern states at different times, from 1995 to 1997. Testing the operating mechanism in audiences' processing of health campaign messages is important because it essentially determines whether the messages reach those whom they target. If selective perception operates, then health campaigners should credit themselves with some success at least because that means people prone to the behavior targeted in their messages are tuned to them. But if, by contrast, another psychological mechanism operates, specifically, perceptual defense, then that means health campaign messages fail to reach exactly those whose behavior they are targeting.

## Literature review

### *Health campaigns and their effects on audiences*

Health campaign messages in the media usually take the form of public service announcements (PSAs). They are created by a variety of federal, state, and non-governmental organizations. In general, public service announcements are received favorably by audiences. In fact, a 1980 survey of 1,500 adults showed that 74% said they paid "at least some" to "a lot" of attention to PSAs (O'Keefe, 1989). Viewers have been shown to be more knowledgeable and have more favorable attitudes after viewing PSAs. It was even suggested recently that "public service advertising has helped reduce drunk driving to its lowest rate ever, convince 66% of Americans to 'Take a bite out of crime' in their communities and increase safety belt usage from 11% to 68% over the last two years" (Wooden, 1996). Indeed, in a time series analysis carried out by Murry, Jr., Stam and Lastovicka (1993), results showed that a public service campaign reduced drinking and driving among males 18 to 24 over two years.

Unfortunately, Murry et al.'s study is an exception. It still remains unclear whether PSAs consistently influence behavior. Although there is evidence that PSAs create awareness of a problem and information about how it can be solved (Wallack & DeJong, 1995, p. 257), there is not much evidence that they create behavioral changes. The phenomenon of changed knowledge and attitudes, but not behavior, has been called the KAP-gap (Hornik, 1989; Gantz, Fitzmaurice, & Yoo, 1990). Knowledge and attitude change, while practice remains unaffected. PSA campaigns in other areas, e.g., those aimed at reducing AIDS-risk practice, have shown similar patterns of evidence for increased knowledge --and even that has been inconsistent--but not for behavioral changes (Fisher & Fisher, 1992).

There are many possible reasons for the failure of PSAs to influence behavior. The messages themselves may be poorly designed and executed. Their airing is infrequent compared to paid ads. The placement of PSAs is notoriously inadequate, given that it is donated time. Stations differ in the priority and the time they allocate to public service, so exposure varies, depending on the main media source people use (Goodstadt & Kronitz, 1977; Maloney & Hersey, 1984). Furthermore, Atkin (1981) suggests that people may not have the skills to initiate and maintain the desired behavior change, when they are exposed to PSAs.

In the specific area of preventing drunk driving, another type of health or safety-oriented messages are moderation ads. They are created and run at the expense of alcohol companies, most commonly the beer industry. Both anti-drunk driving PSAs and moderation ads are aimed at leading to four types of behavior: not driving after drinking; not riding with a drunk driver; using a designated driver; and preventing someone who is drunk from driving (e.g., DeJong & Atkin 1995, p. 62). There are several critical differences between the two types of messages, however, that may account for differences in their effects based on the way they are processed by the audience.

Moderation messages are probably more advantageously placed in programming, e.g., in sports events. But their frequency is estimated to be quite low and they may have a credibility problem. For example, they may suffer from people's perception of a certain degree of hypocrisy: Although they are created and sponsored by the alcohol industry, which is clearly focused on selling its product, they simultaneously espouse use in moderation or sometimes tell the viewer that driving and drinking do not mix. The perception of moderation ads could be similar to the perception of advertisers who strategically make claims about environmentally safe products. Davis (1994) found that audiences do not trust such ads, which he explained with people's tendency to base their trust on perceived motivations of ad sponsors. If those motivations seem to coincide with audiences' values and goals, then the likelihood of trust is higher. But in an extension to the case of moderation ads, if audiences see them as an effort by the alcohol industry to improve its image and raise sales, obviously they would not be trusted. Indeed, DeJong, Atkin and Wallack (1992) placed the timing of moderation ad campaigns in the context of declining beer sales and low credibility of the beer industry. They suggested that moderation messages may have a boomerang effect if they are viewed as part of public relations operations, rather than as sincere attempts at reducing drinking and driving. In addition, precisely because they are a product of the alcohol industry, moderation messages may suffer from general negative perceptions of commercials, which are often seen as manipulative, exaggerated, incomplete, psychologically invasive or insulting to the intelligence (Pollay, 1989; Thorson, 1989).

There is still little empirical research on perceptions and effects of moderation messages specifically. The few studies so far have measured mostly their impact on attitudes. Atkin, DeJong and Wallack (1992) found that young drivers perceive the sponsors of moderation messages as "responsible," despite a realization they aim to sell as much as other commercials do. Slater and Domenech (1995) observed the effects of a repeated-measures exposure to beer moderation ads on participants' ratings of beer risks and benefits. Participants who saw the moderation ads were likely to view beer risks as greater and repeated exposure to the moderation ads was associated with less confidence in beer benefits. Saffer (1995, p. 92) argues that "counteradvertising" in general, in which he seems to include both public service announcements against drunk driving and industry-sponsored ads about using alcohol wisely, have an effect in reducing drinking. This is a reasonable suggestion -- it can be assumed that PSAs and moderation ads may act together synergistically, bringing the same or similar message from two distinctly different sources (for an example of a synergistic information campaign see Schooler, Flora, & Farquhar, 1993).

PSAs and moderation ads share at least two problems. Both messages are not exactly primarily information entities: like all ads in general, they rely on images and emotional stimulation, instead of lectures on drunk driving (Thorson, 1990). But more critically, unlike the advertising of alcohol or cigarettes (Strickland & Finn, 1984; Thorson, 1995), they seem to *not* target a specific audience. Atkin and DeJong (1992, cited in Wallack & DeJong, 1995, p. 255) and DeJong and Atkin (1995) concluded from a content analysis of 137 television PSAs against drunk driving that perhaps they failed to reach those groups that needed them most--because of lack of targeting. Austin and Johnson (1996) remarked that age- and gender-specific targeting in alcohol prevention programs is a "major challenge."

Yet, message targeting or segmentation to a local market or specific audience has been one of the critical elements of successful campaigns, including health-oriented ones (e.g., Grunig, 1989; Maloney & Hersey, 1984; McGrath, 1991; Mendelsohn, 1973; Palmgreen, Donohew, Lorch, Rogus, Helm & Grant, 1991; Williams & Flora, 1995). Not surprisingly, research on public service and health information campaigns supports the theory that their effects depend on the individual needs of the audience members, which determine whether they would attend to the message and whether, ultimately, a behavioral change would occur (Calvert, Cocking & Smrcek, 1991; Ledingham, 1993). Because health campaign messages may not be appealing to specific groups' needs, this research needs to address some concepts of selective information processing.

*Selective information processing*

The classic concepts of selective perception and perceptual defense suggest two useful, but contradictory, ways of looking at what may happen when people are exposed to health campaign messages. Selective perception (also referred to as cognitive consistency) involves two processes, selective attention and selective retention. Selective attention (also known as selective exposure) is the tendency for a person to attend to the parts of a message that are consonant with his/her own attitudes, beliefs or behaviors. Selective retention is the tendency to recall that consonant information (e.g., Levine & Murphy, 1958).

Both selective attention and retention are described by Donohew and Tipton's (Donohew & Tipton, 1973; Donohew, Tipton & Haney, 1978) flow model of information seeking, avoiding, and processing. According to their model, people's personal experiences, goals, preferences, beliefs, self-schemas and other knowledge structures operate together to form a strategy for coping with incoming information. As the name of the model suggests, people are active processors of that information, even when it is not deliberately sought. An act of decision-making is involved at every step of that model--to accept or reject that information, where to place it in the levels of priority, and whether to revise it, perhaps seeking out more information. Donohew and Tipton's model is directly relevant to the processing of PSAs and moderation ads. First, it suggests that the same messages do not affect people in the same way; they may not even make it through the initial screening stage. Second, the model articulates the role of personal experiences, beliefs and behaviors, even after the message has been accepted for further processing--e.g., a parent is likely to assign a different priority to a health- or safety-oriented message, compared to a teenager. Third, the model includes the impact of information sources, which is pertinent to possible differences in the processing of PSAs and industry-sponsored moderation ads.

Empirical evidence for selective perception abounds both in survey and experimental studies since the early years of mass communication research. In survey research, from the time of Lazarsfeld and Klapper, evidence for selective perception varies from audience members' preference for particular channels vs. others, anchors, messages, and even in voting for politicians who are seen as performing most consistently with one's own views and values. In experimental studies, eye-movement tracking and galvanic skin response have documented the presence of a "noxious state of stress" that belief-discrepant information produces among dogmatic people (Donohew & Basenheart , 1974, p. 33; Donohew & Palmgreen 1971; Donohew, Parker, & McDermorr, 1972).

In contrast, the evidence for perceptual defense is less clear. The concept of perceptual defense suggests that when messages cause psychological discomfort by challenging their own beliefs, attitudes or behaviors, people will rationalize, exhibit incredulity, or attach source credibility to avoid or reduce the psychological discomfort (Severin & Tankard, 1988). They may also attempt to avoid the message altogether by changing the channel, leaving the room, or in some other way discontinuing attention to the message.

The concepts of selective perception and perceptual defense are derived from Festinger's theory of cognitive dissonance, Heider's balance theory and Newcomb's symmetry theory (Festinger, 1957; Chaffee, Stamm, Guerrero, & Tipton, 1969; Petty & Cacioppo, 1981). All these notions explain the human need for consistency with a strive toward symmetry or balance or equilibrium. A special case of Heider's balance theory is Osgood's congruity theory that explains particularly people's attitudes toward sources and objects of information. As in balance theory, people strive for congruity, always trying to reconcile their own attitude toward an object with somebody else's assertions about it.

Other concepts also suggest a selective processing of health campaign messages. For example, Atkin's concept of cognitive adaptation (Atkin, 1973, p. 208) is defined essentially as a lens of personal relevance or importance, through which individuals survey information from their environment. Similarly, research on message discrimination looks at the impact of motivation on information seeking and learning from information campaigns (Salmon 1986; Yows, Salmon, Hawkins, & Love, 1991). Grunig's situational theory posits that involvement, among other predictors, determines information seeking in exposure to PSAs against drunk driving (Grunig & Ipes, 1983). The role of involvement (issue, situational, personal) in information searching particularly, has been extensively covered in persuasion studies (e.g., Flora & Maibach, 1990; Rifon, Mavis, Tucker, & Stöffelmayr, 1992). Ego-involvement or egocentrism is also studied in association with susceptibility to public service campaign messages (Greene, Rubin, Hale, & Walters, 1996).

It is clear from the literature reviewed above, however, that not all health campaign messages, are likely to be equally effective with different segments of the population. In fact, because health campaign messages usually denounce certain behavior, it is important to know how those messages affect people who do not practice that behavior and people who do, e.g., non-drinkers and drinkers or non-smokers and smokers, and further, light, medium, and heavy users, respectively. There is experimental evidence that alcohol and cigarette advertising affects such diverse populations in different ways. For example, participants who had not used alcohol or tobacco but had not ruled out the possibility of experimenting with them, liked ads for them significantly more than participants who had never used and did not intend to use them, and in general liking for the ads increased with substance use (Unger et al., 1995). Similarly, simply whether a person drinks or smokes and amount of drinking or smoking can be critical variables in determining attention to anti-drunk driving or anti-smoking messages, how much information would be retained from that message, and whether it would translate into changed attitudes and behaviors.

## Hypothesis

Based on the above review and the practical importance of detecting the psychological mechanism that operates in audiences' processing of health-oriented messages, this research posited the following hypothesis consisting of two alternative parts:

**Ha: People who exhibit the specific habit related to the behavior targeted by health campaign messages will be *more* likely to remember seeing those messages.** For example, those who consume alcohol will be *more* likely to remember seeing anti-drunk driving messages. Those who smoke will be *more* likely to remember seeing anti-smoking messages. And vice versa, people who do *not* exhibit the specific habit related to the behavior targeted by health campaign messages will be *less* likely to remember seeing those messages. For example, those who do *not* consume alcohol will be *less* likely to remember seeing anti-drunk driving messages. Those who do *not* smoke will be *less* likely to remember seeing anti-smoking messages (*selective perception hypothesis*)

**Hb: People who exhibit the specific habit related to the behavior targeted by health campaign messages will be *less* likely to remember seeing those messages.** For example, those who consume alcohol will be *less* likely to remember seeing anti-drunk driving messages. Those who smoke will be *less* likely to remember seeing anti-smoking messages. And vice versa, people who do *not* exhibit the specific habit related to behavior targeted by health campaign messages will be *more* likely to remember seeing those messages. For example, those who do *not* consume alcohol will be *more* likely to remember seeing anti-drunk driving messages. Those who do *not* smoke will be *more* likely to remember seeing anti-smoking messages (*perceptual defense hypothesis*).

## Method

The hypothesis was tested in three representative surveys of populations in two different Midwestern states, from 1995 to 1997. Survey research has been an externally valid method for studying effects of health campaign messages but has been criticized for its lack of internal reliability and inability to address causal concerns (e.g., Lastovicka, 1995, pp. 70-71). However, this study goes beyond the kind of correlational analysis that often fails to control for spurious relations and remove the effects of confounding variables. In all data analyses, we first removed the impact of potentially confounding variables, such as gender, age, racial or ethnic background, income level, education level, and marital status.

### *Survey 1*

The first survey was conducted in 1995 with a representative sample of 1,700 adults and youths in five different areas of the Midwestern state X. The survey was conducted by the staff of a professional survey center at a Midwestern university. Between March 29, 1995 and May 14, 1995, the survey center conducted telephone interviews with 1359 adults 21 years of age and over and 341 with youths aged 15 to 20.

Stratified random digit dialing and the Troldahl-Carter-Bryant method for the selection of respondents (Lavrakas, 1993) were employed to ensure a sample representative of both the state and of five major areas within it. Computer Assisted Telephone Interviewing (CATI) software was used in the selection of respondents from a given household and for entering their responses.

The main areas included in the questionnaire and of interest to this study were: awareness of and memory for public safety announcements and messages for moderate use of alcohol aired by the alcohol industry, whether respondents drink, specific number of drinks on average on weekdays and weekends, and demographic variables. In addition, the survey asked questions querying respondents' awareness of various state alcohol-related safety programs and their attitudes toward stricter alcohol-related highway safety policies. Table 1 includes the specific questions and descriptive statistics.

As can be seen in Table 2, the demographics of the adult and youth samples closely matched those of the census. Females were just slightly over-represented in the adult sample, however, which is typical for telephone surveys. The youth sample was ethnically more diverse than the adult sample, which matched the census trends.

In preliminary descriptive analyses, no difference was found for alcohol consumption among adult and young drivers. Forty-four percent of the adults and 46% of the youths who had a driver's license reported occasionally drinking alcohol (for the youths without a driver's license that percentage was 27). Thirty-five percent of the adults and 17% of all youths (drivers and non-drivers) reported having one or more drinks on an average weekday. Seventy-two percent of the adults and 87% of all youths reported having one or more drinks on an average weekend day. These findings are consistent with a Surgeon General's report from the early 1990s (cited in Gerbner, 1995, p. 17), which found that half of the high school juniors and seniors reported drinking alcohol.

The survey also included questions specifically directed at testing respondents' memory of drunk driving PSAs and industry-sponsored moderation ads about using alcohol wisely. First, respondents were asked whether they remembered seeing any television ads about drunk driving in the last month. Those who answered yes were then asked to describe what specifically they remembered about them. The same questions were asked regarding television ads about using alcohol wisely and what specifically respondents remembered about those. The open-ended answers for what specifically respondents remembered about the two types of messages were coded into six categories for each type of message, presented in Table 3.

The awareness of PSAs concerning drunk driving was generally higher among youths than among adults. The majority of adults and youths reported seeing ads about drunk driving in the last month or so. Sixty-one percent of the adults and 75% of the youths said they had seen a PSA concerning drunk driving in the past month, but 35% of the adults and 23% of the youths could not remember anything specific about any of those PSAs. The most widely remembered PSA was concerned with "death/accident/ crash or a violent picture." Unfortunately, we do not have any data to compare the audience's memory with the type of messages that were actually most prevalent on the air. It is possible that the "death/accident/ crash or a violent picture" category was not the most aired type of message. For example, DeJong and Atkin (1995, p. 63) found in a content analysis of drunk driving PSAs that the single most produced type of message was "Designate a Driver." Our finding, however, that scenes of death and accident were recalled best, is consistent with research on high-threat alcohol PSAs (King & Reid, 1990) and PSAs in general (e.g., anti-violence or AIDS PSAs where ads with fear appeals were found most effective in producing emotional response--Biocca, Brown, Shen, Batista, Makris & Bernhardt 1996; Dillard, Plotnick, Godbold, Freimuth & Edgar 1996). It is also consistent with the vividness effect hypothesis, which suggests that vivid messages would be more memorable (e.g., Cremedas, Steele & Werner, 1995; Iyengar & Kinder, 1987). Forty-eight percent of the adults and 52% of the youths remembered this type of PSA.

The visibility of industry moderation messages was about the same for adults and youths. Thirty-eight percent of the adult respondents and 36% of those under 21 said they had seen a moderation message from an advertiser in the last month. However, 25% of the adult and 25% of the youth respondents who reported having seen a moderation message could not remember anything specific about that message. For both adults (39%) and youths (32%), the most remembered commercial fell in the "Drink responsibly" category, which is consistent with the definition of a moderation ad. This was followed by the category "Budweiser/Busch" (20% for adults and 23% for youths). In the coding of the open-ended answers, it was also observed that respondents frequently cited the "Know when to say when" message. This matches a trend in recent campaigns. For example, DeJong, Atkin and Wallack (1992, p. 661) cite a figure of $15 million spent by Anheuser-Busch on that campaign, "a sizable amount compared with typical health campaigns." Table 3 presents the distribution of respondents' memory of PSAs and moderation ads. For the data analysis, two new variables were created: PSA memory and moderation ad memory. In both, zero indicated the respondent did not remember seeing the message, one meant the respondent remembered seeing the message but could not recall specifics, and two indicated the respondent remembered specific messages. These two variables were used as dependent variables in separate analyses where the independent variables were whether the respondent drinks and how much, controlling for demographics.

*Survey 2*

A second survey was conducted in the same state of X in 1997. This time the sample was even larger, 4,445 respondents age 21 and above, and represented residents of eleven different areas of the state. The same survey center identified the samples from each area and conducted the interviews from May 13, 1997 to September 30, 1997. An almost equal number of respondents (about 400) were interviewed from each area. This diversity of geographic areas within the state and their respective populations should at least to some extent compensate for any potential bias due to a sample from a Midwestern state only. Different patterns of drinking and driving, as well as exposure to PSAs and moderation ads and news media consumption, are associated with each one of these areas.

Again, stratified random digit dialing and the Troldahl-Carter-Bryant method for the selection of respondents were used to ensure a sample representative of both the state and of eleven areas within it. CATI software was used in the selection of respondents from a given household and for entering their responses.

Two main differences between the 1995 and the 1997 surveys need to be pointed out. First, the 1995 survey included interviews with youths, age 16 to 21. In the statistical analyses their responses were compared to those of the adult respondents. The 1997 sample did not include respondents below the age of 21 but it span across seven more geographic areas and its size was more than double that of the 1995 sample.

The main questions included in the 1997 questionnaire and of interest in this study were: memory for anti-drunk driving PSAs and messages for moderate use of alcohol aired by the alcohol industry, whether respondents drinks and if so, how much, demographic variables, and type of area where respondent lives (e.g., rural vs. urban). Table 1b includes the specific questions.

As can be seen in Table 2b, the demographics of the 1997 sample showed a slight overrepresentation of white, middle-aged respondents, with higher levels of education and income than in the '97 Census.

In preliminary descriptive analyses, it was found that a high 41% of the respondents said they never drink alcohol at all, 34% said they drink rarely, 20% said drink once to twice a week, three percent said they drink nearly every day, and two percent said they drink every day.

All respondents were also asked whether they remembered seeing any television ads about drunk driving (PSAs) in the last month or so. Fifty-nine percent said yes. A similar question was asked about seeing any television ads about using alcohol wisely (moderation ads) in the last month or so. Fifty-one percent said yes. These two variables were used as dependent variables in separate analyses where the independent variables were whether the respondent drinks and how much, controlling for demographics.

*Survey 3*

The third survey tested the impact of a second-hand smoke campaign in one county of another Midwestern state, Y, in 1997. This paid multi-media health campaign focused on encouraging adults in the county to forgo smoking around children. Called "Let's take it outside," the campaign also involved significant television and newspaper coverage. A telephone survey to measure baseline attitudes, knowledge and smoking behavior was carried out immediately before the multi-media campaign began. After three months of the campaign, a second telephone survey measured changes. This paper reports the findings of the second survey because it specifically shows whether smokers were more or less influenced by the campaign's messages.

Between July 1 and July 30, 1997, 1030 telephone interviews with adults 18 years of age and older were conducted by the same survey research center that conducted surveys 1 and 2 in state X. As in those surveys, stratified random digit dialing and the Troldahl-Carter-Bryant method were used in the selection of respondents to ensure a representative sample of the county. Again, CATI software was used in the selection of respondents from a given household and for entering their responses. Table 2c shows a comparison of the sample and census demographics. As can be seen, there was a good match with the census figures, although the sample had higher education levels and a slightly older representation than the county itself.

The main questions included in the questionnaire and of interest to this study were: whether respondents smoke, memory of seeing or hearing the messages of the "Let's take it outside" campaign, memory of news stories about the campaign, and demographic variables. But in addition to these questions, the survey asked about attitudes and knowledge concerning second-hand smoke and its impact. To save space, these measures are not included in a separate table because they are described in the text of the results section and listed in Table 7 with descriptive statistics.

In preliminary descriptive analyses, it was found that 19.5% of the respondents said they smoked. Of them, 10% indicated they always smoked indoors at work, 64% said they never smoked indoors at work, 41% said they always smoked in their home, and 44% said they always smoked while driving their car (these percentages are from separate questions and should not be added to 100). There was high reporting of exposure to all media involved in the campaign (television, radio, newspapers, and billboards). This is not surprising because the advertising schedule was extremely heavy. Television ads and television news stories showed the highest awareness levels for all respondents. The measures of awareness of the campaign in the various media (both advertising and news media) were used as dependent variables and smoking was used as an independent variable, controlling for the effects of demographics.

## Results

The hypothesis guiding this study was tested with both descriptive and inferential statistics. The inferential statistical tests were hierarchical multiple regressions controlling for the effects of demographics. In general, awareness of the health campaign messages was the dependent variable and the specific habit related to behavior targeted by them, e.g. drinking or smoking, were the independent variables, entered after demographics.

In all three surveys, Hypothesis a (of selective perception) received consistent support. First, in Survey 1, regardless of which measure of drinking was employed, drinking was correlated with memory for moderation ads and awareness of safety programs. Memory for moderation ads was predicted consistently by whether respondents drank, and how much they drank both on weekdays and weekends. PSA memory, however, was not predicted by any of the drinking measures. But general amount of drinking and number of drinks per weekend day also significantly predicted awareness of state alcohol-related safety programs. Therefore, it is clear that those who need the impact of these messages and programs the most are processing and remembering them: the more people drink, the more likely they are to remember the messages. Table 4 shows these results.

Related to the hypothesis of selective perception is the question of possible interactions between amount of drinking and awareness of health campaign messages and safety programs and how those interactions may impact attitudes toward safer behaviors. Three types of significant interactions were detected, again after controlling for the effects of demographics. The statistical significance of these interactions was tested by Fisher's studentized test of differences among the adjusted means (after removing the effects of the control variables). For the three dependent variables for which amount of drinking and ads and safety programs interact, the patterns are somewhat encouraging. Figure 1 shows that when the dependent variable is support for stricter alcohol-related policy, there is no difference among the non-drinkers for none, some and high memory for PSAs. But among those who drink four or more drinks on weekdays, those who have some PSA awareness and memory are more supportive of restrictive policies than those who have no memory for PSAs. Unfortunately, this is balanced by the fact that those who drink four or more drinks on weekdays and have high memory for PSAs are least likely to support alcohol-related policy. In addition, Figure 2 shows that for those who drink a lot, high awareness of safety programs increases support for alcohol-related policies. In fact, the boost is higher than for those who drink less.

Second, in analyzing the data from Survey 2 hierarchical multiple regressions were performed, controlling for the effects of demographics and type of residential area. Again, the independent variable was frequency of drinking and the dependent variables were memory for PSAs and moderation ads. The regressions were logistic because the measures of memory for anti-drunk driving PSAs and moderation ads were dichotomous (remember seeing them or not). The results again lend support to the selective perception hypothesis, as shown in Table 5. Frequency of drinking was positively associated with memory for PSAs (though marginally) and memory for moderation ads (significantly). This means that the greater the frequency of drinking respondents reported, the more likely they were to also report seeing drunk driving PSAs and ads about using alcohol wisely in the last month or so.

Finally, selective perception seemed to operate in the processing of the "Let's take it outside" multi-media campaign in a county of State Y in 1997. First, smokers were more likely to say they had seen the ads of the campaign on television and in the newspaper and had heard them on the radio, as Table 6 shows. Second, smokers seemed to exhibit a greater change after the campaign, compared to non-smokers. The non-smokers were initially quite high in their agreement with a statement that second-hand smoke is harmful to others (93%) but they also showed no change in the after-campaign survey. The smokers showed a change of 13 percentage points, with 81% in the second survey agreeing or strongly agreeing with that statement, compared to 68% in the baseline survey. (In comparing the whole samples from the baseline to the second survey, a change of 7 percentage points is statistically significant). In addition, while 99% of the smokers interviewed in the first survey agreed or strongly agreed with the statement that "Smokers should be able to smoke in their own homes," after the "Let's take it outside" campaign started, the percent of agreement fell to 42% (a change of 57 percentage points). For comparison, the non-smokers' change was only three percentage points. Furthermore, the percentage of smokers who agreed with the statement "It is too much trouble for smokers to go outside their home to smoke" fell between the two surveys from 38 to 28. Another interesting, statistically significant change in the smokers' attitude after the campaign was exhibited in the level of agreement or strong agreement with the statement "I'd never take a job where smoking was banned." In the baseline survey, 30% of the smokers agreed or strongly agreed with it. In the after-campaign survey, only 13% of the smokers agreed or strongly agreed with (a change of 17 percentage points). Similarly, while 20% of the smokers in the baseline survey agreed or strongly agreed with the statement "I'm in favor of banning smoking in all public indoor places," that percentage rose to 40% (a change of 20 percentage points) in the survey following the campaign. Finally, smokers' attitudes demonstrated a significant effect of the campaign when 75% of them said that breathing second hand smoke is "very dangerous" to children. In the baseline survey, only 30% had said that (a change of 45 percentage points). There was also an increase in smoker agreement with the statement that "I understand how second-hand smoke damages children's health" (from 74% to 86%, a change of 12 percentage points). These findings are shown in Table 7. What is most important for testing the selective perception vs. perceptual defense hypothesis is that, for all these statements, the non-smokers' change in attitude was, for the most part, minimal and negligible, compared to the smokers'.

In general, then, smokers, but not non-smokers, showed significant and nearly significant changes in responses to a number of awareness and attitudinal questions that indicated a direct impact of the messages contained in the campaign. In addition to showing that health campaigns in which media time is donated can be successful (in contrast to findings by Bauman, Brown, Bryan, Fisher, Padgett, & Sweeny, 1988), at least in changing awareness and attitudes, this also lends support to the selective perception hypothesis. Smokers were more likely to remember being exposed to the messages of the campaign, but, more than that, they also showed a greater change in general awareness of the facts of the campaign and exhibited significant positive attitudinal changes, as desired by the campaign.

## Discussion

The most important finding in this study, pooling together the results of three different representative surveys conducted in two states in the span of three years, is that selective perception seems to be the psychological mechanism operating in audience processing of health campaign messages. This is an important theoretical finding because it means that careful targeting is critical for health- and safety-oriented campaigns' effectiveness, as was elaborated in the literature review. If indeed people who have the habit associated with a particular unsafe or unhealthy behavior are more likely to tune into and remember messages against it, then the first purpose of a campaign -- to capture attention -- is already being fulfilled. In addition, the significant effect of the interaction between drinking and awareness for safety messages and programs on support for stricter policy found in Survey 1 shows the importance of selective perception further down the line--leading from attention to positive attitude. This was also demonstrated in the significant changes in attitudes among smokers in the results of Survey 3.

In addition, results for awareness of anti-drunk driving PSAs and moderation ads were consistent in both the 1995 and 1997 surveys, conducted in different areas of the same state, with different (each cross-sectional) samples. For both samples, respondents who reported they drink and/or drink more also reported stronger awareness for moderation ads specifically. In Survey 1, whether a respondent drinks and amount of drinking were not significantly associated with memory for PSAs, after controlling for demographics. In Survey 2, respondent's amount of drinking was marginally associated with memory for PSAs, after controlling for demographics. But in both surveys, amount of drinking was significantly, positively associated with memory for moderation ads.

It could be that selective perception operates more consistently for moderation ads, which specifically tell people that it is acceptable to drink, but simply warn against excess and the associated risky behaviors. They usually appeal to the user's sensibility in a rational and understanding manner. By contrast, PSAs do not include that explicit acceptance of drinking, but denounce it, and usually appeal to fear by showing threatening images (at least that's what respondents in Survey 1 recalled the most). It could be that for PSAs specifically, selective perception may operate for some drinkers, while perceptual defense may operate for others. Perhaps some drinkers shield themselves from PSAs but are sensitized more by moderation messages, which are not inconsistent with their beliefs and lifestyle.

This explanation receives support from the findings of Survey 3. Notice that the multi-media heath campaign reported here did not even attempt to tell people to quit smoking. All it said was: "Let's take it outside." Similarly to moderation ads, it did not denounce the habit per se, only the behavior associated with it that could be harmful to others. It would be interesting to compare the response to that kind of campaign to a campaign that explicitly urged people to stop smoking and then specifically examine the operating mechanism involved in processing the message and in determining consequent cognitive, attitudinal, and behavioral responses.

To sum up, this study found consistent support for the operation of selective perception in the processing of health or safety campaign messages that ask for a moderate, not extreme, change in habit and behavior. At least two next steps seem necessary. First, we need to find out experimentally, for a greater confidence in cause-and-effect associations, under what conditions specifically selective perception operates. Second, we need to keep probing into further research that will determine when and how changed knowledge and attitudes can translate into actual safer behaviors. With all the research in health communication, social psychology, and media-enhanced campaigns, we still don't know how to ensure the desired behavioral change. Identifying the psychological mechanism that operates in the processing of health campaign messages is a step in that direction.

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## Table 1a: Measures in Survey 1 (Awareness of and memory for anti-drunk driving PSAs and moderation ads, Midwestern state X, 1995)

**Drinking patterns**

Do you occasionally drink alcohol?
response categories: 1=yes; 0=no

On weekdays, how many drinks do you have on average?
response categories: 0=none; 1=one; 2=2-3; 3=4 or more

On weekend days, how many drinks do you have on average?
response categories: 0=none; 1=one; 2=2-3; 3=4 or more

**PSAs awareness and memory**

Have you seen any television ads about drunk driving in the last month or so?
response categories: yes; no

Please tell me what you remember about them.
response categories: specify; could not remember; don't know/not sure; refused to answer

For the analyses, a new variable was composed where 0=no memory for PSAs, 1=remember seeing them, but don't remember specific ads, 2=remember specific ads

**Moderation ads awareness and memory**

Have you seen any television ads about using alcohol wisely in the last month or so?

response categories: 1=yes; 0=no

Please tell me what you remember about them.

response categories: specify; could not remember; don't know/not sure; refused to answer

For the analyses, a new variable was composed where 0=no memory for ads about using alcohol wisely, 1=remember seeing them, but don't remember specific ads, 2=remember specific ads

**Awareness of state alcohol-related safety programs**

For each of the following highway safety programs, please tell me whether you have heard of it and know what it is (2), have heard of it but aren't sure what it is (1), or haven't heard of it (0).

Sobriety Checkpoints
Alcohol-Free Prom and Graduation Parties held at high school
Car crash re-enactments held at high schools
More highway law enforcement occurring at holidays

The four variables were summed, alpha coefficient=.58; possible range of scale=0 to 8

**Support for state alcohol-related policy**

(The state) has a law that makes it illegal for people to operate a motor vehicle if they have a blood alcohol concentration of .10% or more. Research indicates many drivers are impaired beginning at a level of .04%. Do you favor lowering (the state's) legal level to .04%?

Would you favor additional taxes on liquor if the money sent for programs aimed at reducing drunk driving?

Would you support a $100 to a $200 user fee to be assessed to DWI offenders if the money went back to counties to enhance enforcement?

Would you favor making it illegal to have an open container of an alcoholic beverage in a vehicle?

(State) law does not permit those under 21 to purchase alcohol. Do you favor making it illegal for minors to drive if they have alcohol in their systems?

Response options for each questions: 1=yes; 0=no

The six variables were summed, making an index of support for state alcohol-related policy; alpha coefficient =.61; possible range=0 to 6

**Demographics (control variables)**

Gender: 1=male; 2=female

Age

Ethnicity: 1=white; 0=minority

Education level: 1=Never attended school or kindergarten only
2=Grades 1 through 8 (elementary)
3=Grades 9 through 11 (some high school)
4=Grade 12 or GED (high school graduate)

5=College 1 year to 3 years (some college or technical school)
6=College 4 years or more (college graduate)
7=Post grad/professional

Annual household income: 1=Less than $10,000
2=$10,000 to less than $15,000
3=$15,000 to less than $20,000
4=$20,000 to less than $25,000
5=$25,000 to less than $35,000
6=$35,000 to 50,000
7=over 50,000

Full-time employment: 1=full-time; 0=part-time

## Table 1b: Measures in Survey 1 (Awareness of and memory for anti-drunk driving PSAs and moderation ads, Midwestern state X, 1997)

**Drinking patterns**

About how often do you drink alcoholic beverages? Would you say...

1= never; 2=rarely; 3=once or twice a week; 4=nearly every day; 5=every day

**Memory for PSAs**

Have you seen any television ads about drunk driving in the last month or so?

1=yes; 0=no

**Memory for moderation ads**

In the last month or so, have you seen any television ads about using alcohol wisely?

1=yes; 0=no

**Demographics (control variables)**

Gender: 1=male; 0=female
Age
Race/ethnicity: 1=white; 0=minority
Education level (as listed in Table 1a)
Annual household income (as listed in Table 1a)
Employed: 1=employed full time, employed half time, self-employed; 0=student, retired, homemaker, disabled, unemployed;
Marital status: 1= married; 0=single, divorced, separated, widowed, member of unmarried couple
Residential area: 1=suburban or urban area; 0=rural, farm, small town of up to 39,999 population

## Table 2a: Comparison of sample demographic characteristics to the 1990 Census for Midwestern state X (Survey 1: Awareness of and memory for anti-drunk driving PSAs and moderation ads, Midwestern state X, 1995)

| **Demographic** | **Adults census (%)** | **Adults sample (%)** | **Youth census (%)** | **Youth sample (%)** |
|---|---|---|---|---|
| | | **Gender** | | |
| Male | 47 | 41 | 51 | 51 |
| Female | 53 | 59 | 49 | 49 |
| | | **Age**<br>**21 and over** | **15 to 20** | |
| | 68 | 75 | 10 | 25 |
| | | **Race** | | |
| White | 89 | 93 | 85 | 88 |
| Black | 9 | 5 | 13 | 7 |
| Asian & Pacific Islander | 1 | 1 | 1 | 2 |
| American Indian, Eskimo, Aleut | 1 | 1 | 1 | 2 |
| Other | 1 | 1 | 1 | 1 |

Note: Percentages may not add to 100, due to rounding.

**Table 2b: Comparison of sample demographic characteristics to the 1997 Census for Midwestern state X (Survey 2: Awareness of and memory for anti-drunk driving PSAs and moderation ads, Midwestern state X, 1997)**

| Demographic | Census (%) | Sample (%) |
|---|---|---|
| **Gender** | | |
| Male | 48.4 | 52.5 |
| Female | 51.2 | 47.8 |
| **Age** | | |
| 21-24 | 7.0 | 7.7 |
| 25-34 | 16.7 | 17.8 |
| 35-44 | 14.4 | 23.1 |
| 45-54 | 10.3 | 19.2 |
| 55-64 | 8.9 | 13.9 |
| 65+ | 14.0 | 18.2 |
| **Race** | | |
| White | 87.7 | 89.6 |
| Black | 10.7 | 6.6 |
| Asian & Pacific Islander | 0.8 | 0.8 |
| American Indian, Eskimo, Aleut | 0.4 | 1.0 |
| Hispanic | 1.2 | 0.5 |
| Other | ----- | 1.5 |
| **Education (includes only 25 years +)** | | |
| Less than high school | 26.1 | 9.4 |
| High school | 33.1 | 34.3 |
| Technical school | ------ | 2.9 |
| Some college | 18.4 | 23.2 |
| College graduate | 16.2 | 20.1 |
| Graduate degree | 6.1 | 10.0 |
| **Income** | | |
| less than $10,000 | 17.7 | 8.3 |
| 10,000 to less than 15,000 | 10.3 | 9.6 |
| 15,000 to less than 30,000 | 19.3 | 26.2 |
| 30,000 to less than 50,000 | 33.6 | 29.1 |
| 50,000 to less than 75,000 | 12.6 | 16.4 |
| 75,000 to less than 100,000 | 3.5 | 6.3 |
| 100,000+ | 2.8 | 4.1 |

Note: Percentages may not add to 100, due to rounding.

**Table 2c: Comparison of sample demographic characteristics to the 1990 Census for county S of Midwestern state Y (Survey 3: Awareness of and memory for second hand smoke campaign messages, Midwestern state Y, 1997)**

| Demographic | Census (%) | Sample (%) |
|---|---|---|
| **Gender** | | |
| Male | 49 | 51 |
| Female | 51 | 49 |
| **Age** | | |
| 18-24 | 10 | 8 |
| 25-34 | 20 | 18 |
| 35-44 | 16 | 23 |
| 45-54 | 10 | 20 |
| 55-64 | 13 | 13 |
| 65+ | 12 | 17 |
| **Race** | | |
| White | 85.7 | 86 |
| Black | 9.8 | 6 |
| Asian & Pacific Islander | 2.1 | 1 |
| American Indian, Eskimo, Aleut | 1.2 | 2 |
| Hispanic | 4 | 2.3 |
| **Education (includes only 25 years +)** | | |
| High school or less | 50 | 32 |
| Some college | 24 | 25 |
| College graduate | 20 | 39 |
| Graduate degree | 8 | 13 |

Note: Percentages may not add to 100, due to rounding.

## Table 3:

## Types PSAs and moderation ads remembered (Survey 1: Awareness of and memory for anti-drunk driving PSAs and moderation ads, Midwestern state X, 1995)

| PSAs | Memory |
|---|---|
| Don't let others drink and drive | 7% |
| Don't drink and drive | 22% |
| Death/accident/crash/violent picture | 49% |
| Designate a driver | 8% |
| Dummies | 8% |
| MADD | 7% |
| Total | 101% |
| **Moderation ads** | **Memory** |
| Budweiser/Busch | 20% |
| Coors/Miller/Red Bull | 7% |
| Don't drink and drive | 15% |
| Designate a driver | 15% |
| Don't let others drink and drive | 5% |
| Drink responsibly | 38% |
| Total | 100%% |

Note: Percentages may not add to 100%, due to rounding.

**Table 4: Drinking patterns as predictors of memory for anti-drunk driving PSAs, memory for moderation ads, and awareness of state alcohol-related safety programs (Survey 1, State X, 1995)**

| Dependent variable | Independent variables | Regression coefficient | Incremental adjusted $R^2$ | Total adjusted $R^2$ |
|---|---|---|---|---|
| Memory for PSAs | Controls: Demographics | | .04*** | .04*** |
| | whether respondent drinks | -.01 | .00 | .04*** |
| | general amount of drinking | .002 | .00 | .04*** |
| | drinking on weekdays | .004 | .00 | .04*** |
| | drinking on weekends | .006 | .00 | .04*** |
| Memory for moderation ads | Controls: Demographics | | 05*** | .05*** |
| | whether respondent drinks | .11*** | .01*** | .06*** |
| | general amount of drinking | .11*** | .01*** | .06*** |
| | drinking on weekdays | .10** | .01** | .06*** |
| | drinking on weekends | .09*** | .01*** | .06*** |
| Awareness | Controls: Demographics | | .03*** | .03*** |
| | whether respondent drinks | .13*** | .01*** | .04*** |
| | general amount of drinking | .04* | .01* | .04*** |

| | | | |
|---|---|---|---|
| drinking on weekdays | .03 | .00 | .03*** |
| drinking on weekends | .03* | .01* | .04*** |

Note: $^{a}$ p<.10; * p<.05; ** p<.01; *** p<.001; otherwise variables not significant.

## Table 5: Frequency of drinking as predictor of memory for PSAs and moderation ads, after controlling for demographics and residential area (Survey 2, State X, 1997) (logistic regressions)

| Dependent variable | Independent variables | Regression coefficient | Incremental adj. pseudo-$R^2$ | Total adj. pseudo- $R^2$ |
|---|---|---|---|---|
| **Memory for PSAs** | Controls: Demographics & area type | | .005*** | .005*** |
| | Frequency of drinking | .01[a] | .0001[a] | .0001[a] |
| **Memory for moderation ads** | Controls: Demographics & area type | | .04*** | .04*** |
| | Frequency of drinking | .02** | .001** | .04** |

Note: [a] p<.10; * p<.05; ** p<.01; *** p<.001; otherwise variables or coefficients not significant (n.s.).

## Table 6: Awareness of the news and advertising components of the "Let's Take it Outside Campaign" (Survey 3, State Y, 1997)

Question: "In the last month or so have you seen any of the following sources of information about the effects of second-hand smoke on children?"

| | Smokers | Non-smokers |
|---|---|---|
| Television news stories | 58% | 59% |
| Newspaper news stories | 31% | 31% |
| * Television ads | **76%** | 70% |
| * Newspaper ads | **34%** | 31% |
| * Radio ads | **48%** | 37% |
| Billboards | 22% | 37% |
| Toll-free number included in ads | 19% | 20% |

* Smokers more likely to remember messages.

## Table 7: Attitudes of smokers and non-smokers
## (Number of smokers = 200; Number of non-smokers = 830)
## (Survey 3, State Y, 1997)

**Note: In comparing a sample from the baseline survey to the second survey conducted after the campaign began, a change of 7 percentage points is statistically significant. For non-smokers at the two time periods, a change of 8.5 percentage points is statistically significant; for the smokers, care must be taken because the margin of error is quite large, e.g., 14 percentage points, due to their smaller sample size.**

| Significant (*) within margin of error | | Percent who agree or strongly agree | |
|---|---|---|---|
| | | Smokers | Non-smokers |
| * Second hand smoke is harmful to others. | Baseline: | **68%** | 93% |
| | After campaign: | **81%** | 93% |
| Banning smoking entirely in public places would improve air quality. | Baseline: | 55% | 88% |
| | After campaign: | 58% | 89% |
| In small amounts, smoke exposure is OK. | Baseline: | 48% | 22% |
| | After campaign: | 42% | 22% |
| More people will die this year of second-hand smoke than from cocaine. | Baseline: | 26% | 45% |
| | After campaign: | 30% | 39% |
| Non-smokers should have priority over smokers. | Baseline: | 45% | 77% |
| | After campaign: | 46% | 76% |

279

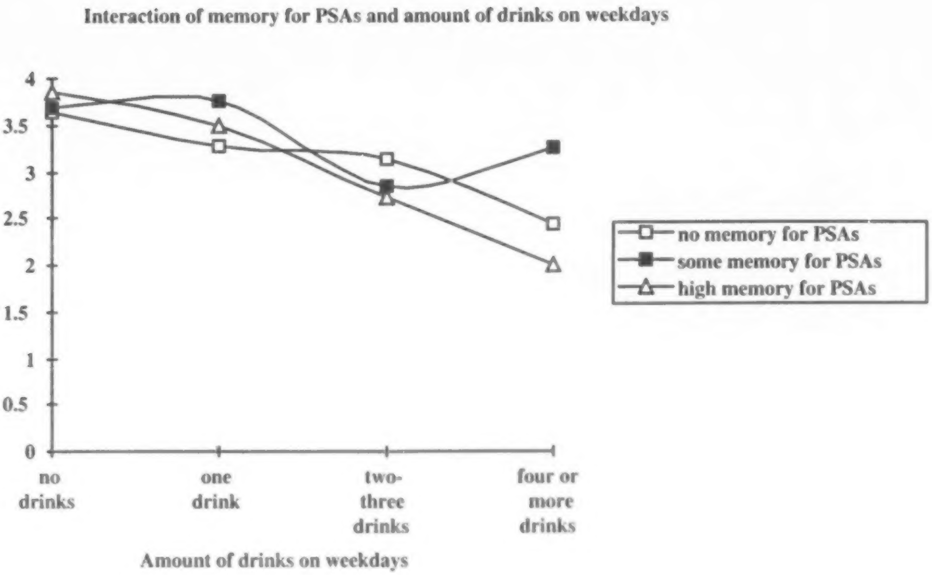
## Table 7 continued

| Significant (*) within margin of error | | Percent who agree or strongly agree | |
|---|---|---|---|
| | | Smokers | Non-smokers |
| * Smokers should have the right to smoke in their own homes. | Baseline: | **99%** | 94% |
| | After campaign: | **42%** | 91% |
| There is too much made of second-hand smoke dangers | Baseline: | 47% | 18% |
| | After campaign: | 40% | 15% |
| I prefer to dine in a restaurant that does not allow smoking. | Baseline: | 18% | 82% |
| | After campaign: | 25% | 83% |
| * It is too much trouble for smokers to go outside their home to smoke. | Baseline: | **38%** | 27% |
| | After campaign: | **28%** | 18% |
| * Children of smokers are more likely to get pneumonia and bronchitis. | Baseline: | **59%** | 83% |
| | After campaign: | **71%** | 84% |
| Tobacco smoke is no more dangerous to children than to adults. | Baseline: | 24% | 16% |
| | After campaign: | 24% | 14% |

**Table 7 continued**

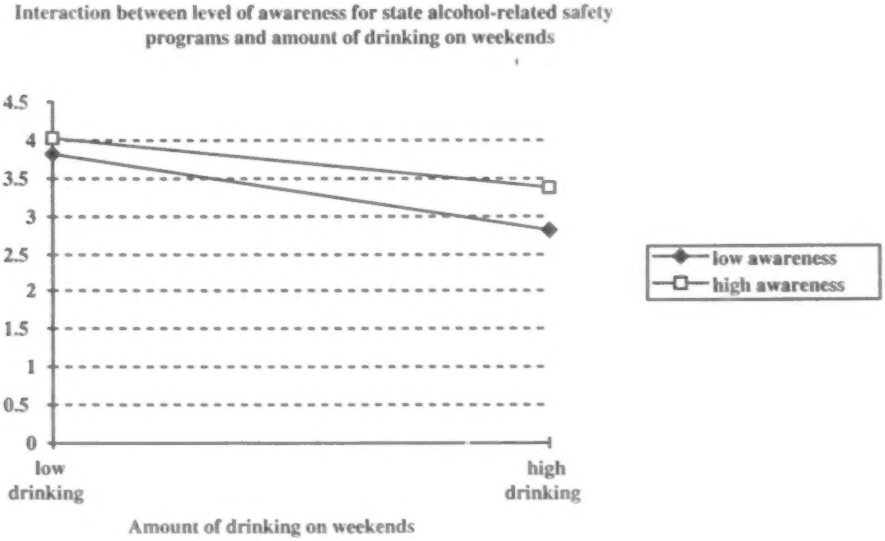
| Significant (*) within margin of error | | Percent who agree or strongly agree | |
|---|---|---|---|
| | | Smokers | Non-smokers |
| * I'd never take a job where smoking was banned. | Baseline: | 30% | 9% |
| | After campaign: | 13% | 9% |
| I have a friend whose smoking saddens me. | Baseline: | 34% | 73% |
| | After campaign: | 37% | 70% |
| As long as you protect kids, adults can fend for themselves. | Baseline: | 66% | 48% |
| | After campaign: | 65% | 48% |
| I understand how second-hand smoke damages adult health. | Baseline: | 78% | 91% |
| | After campaign: | 82% | 88% |
| * I understand how second-hand smoke damages children's health. | Baseline: | **74%** | 84% |
| | After campaign: | **86%** | 88% |
| * I'm in favor of banning smoking in all public indoor places. | Baseline: | **20%** | 78% |
| | After campaign: | **40%** | 83% |

## Figure 1 (Survey 1, State X, 1995):



F=8.33, p=.0001, df (600, 130), $R^2$=.15

## Figure 2 (Survey 1, State X, 1995):



F=14.45; p=.0001, df (877, 8), $R^2$=.13

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# Revisiting the Knowledge Gap Hypothesis: Education, Motivation, and Media Use*

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## Abstract

The findings of this study support the significance of motivational variables and media use in modifying the relationship between education and knowledge acquisition. People's behavioral involvement in the 1992 presidential campaign influenced the knowledge gap due to education such that the gap was significantly smaller among those with a higher level of involvement. Also, respondents' TV news viewing during the campaign significantly reduced the knowledge gap between education groups; thus, the more frequently people watched news stories on TV, the smaller the impact of education on knowledge acquisition.

The results also showed that there was a significant three-way interaction among education, campaign interest, and newspaper attention, which indicates that how newspaper attention contributed to the knowledge gap between education groups differed depending on respondents' campaign interest.

# **Revisiting the Knowledge Gap Hypothesis: Education, Motivation, and Media Use**

Since Tichenor, Donohue, and Olien formalized the knowledge gap hypothesis in 1970, there have been numerous studies investigating various aspects of the phenomenon. Reviewing the literature on the knowledge gap hypothesis from the past 25 years, Viswanath and Finnegan (1996) reported that they identified at least 70 pieces published on the hypothesis. They also noted that the number of studies has continuously increased. Despite the increasing and seemingly intensive research efforts in this area, many important issues still remain unresolved. This study attempted to identify some of these issues and to conduct relevant analyses. The issues addressed in this study include: (1) the role of motivational factors in explaining the knowledge gap between different socioeconomic status (SES) groups; (2) the role of media use in accounting for the SES-based knowledge gap; and (3) how motivational factors and media use interact with each other in accounting for the SES-based knowledge gap.

## Literature Review

### *Motivation and Education*

Beginning with Ettema and Kline (1977), researchers have attempted to identify alternative explanations for the knowledge gap phenomenon. These approaches posit that the knowledge gap between groups is not solely attributable to people's SES, but that motivational factors may significantly account for the phenomenon. This position is clearly contrasted with the original proposition that attempted to provide an education-based explanation, without paying attention to other variables that might have modified the knowledge gap between high and low SES groups (Tichenor et al., 1970). Some studies focused exclusively on the relationship between education levels and the levels of knowledge (e.g., Brantagarde, 1983; Wanta & Elliott, 1995). However, a greater number of studies have addressed the roles of motivational factors such as issue interest, along with SES variables (see Gaziano, 1983 & 1997; Gaziano & Gaziano, 1996; Viswanath et al., 1996).

Researchers have proposed diverse motivational variables: degree of concern (Chew & Palmer, 1994; Ettema, Brown, & Luepker, 1983; Griffin, 1990; Lovrich & Pierce, 1984; Viswanath, Kahn, Finnegan, Hertog, & Potter, 1993); need for information (Gantz, 1978; Horstmann, 1991); issue interest (Genova & Greenberg, 1979; McLeod & Perse, 1994); and personality factors (Simmons & Garda, 1982). In particular, people's behavioral involvement in issue-related activities (e.g., political campaign involvement, interpersonal communication, and attending related lectures) has been demonstrated to be strongly related to knowledge acquisition (Bailey, 1971; Gandy, 1985; Genova et al., 1979; Horstmann, 1991; Lovrich et al., 1984; Nowak, 1977).

Past studies can be classified into three different models depending on how each study posited the relationship between SES characteristics (i.e., education level, for most studies) and motivational factors in explaining knowledge acquisition: the causal association model, the rival explanation model, and the motivation-contingency model. After briefly introducing each model, this discussion will focus on the motivation-contingency model in further detail. As the discussion below will reveal, the motivation-contingency model attracted researchers' attention earlier than any other model, but it is surprising that there have been few empirical studies conducted for that model.

*Causal association model.* The causal association model posits motivational variables as being causally influenced by people's SES characteristics, typically operationalized as education level (Fredin, Monnett, & Kosicki, 1994; McLeod & Perse, 1994). Thus, the effects of education and other SES variables on the knowledge gap are theorized to be mediated by motivational factors, such as issue interest and issue involvement. Studies in this line of research found significant routes relating people's SES variables to knowledge acquisition through various motivational factors. The causal association model does not challenge the original education-only model; rather, it makes a contribution in terms of refining the original explanation by specifying the process of knowledge acquisition. In fact, the original knowledge gap researchers noted the possibility that education, interest, and knowledge level might have positive associations among themselves (Tichenor et al., 1970, p. 161).

*Rival explanation model.* The rival explanation model proposes education and motivational variables as competing sources of effects on knowledge acquisition. Various studies have compared the explanatory power provided by these two rival sources (Chew et al., 1994; Ettema, et al., 1983; Gandy, 1985; Genova et al., 1979; Horstmann, 1991; Viswanath, et al., 1993; Wirth, 1996; Zandpour & Fellow, 1992). The incorporation of motivational variables as an independent cause of knowledge acquisition increases the explanatory power of the whole model. In particular, as stated above, when motivational variables were conceptualized as people's behavioral involvement in a given issue, the impact on knowledge acquisition appeared strong (e.g., Horstmann, 1991; Lovrich et al., 1984). Some studies found that the influence of motivational variables was significantly greater than that of education (Ettema et al., 1983; Genova et al., 1979); others did not (Gandy, 1985; Wirth, 1996).

*Motivation-contingency model.* The motivation-contingency model holds that the SES-based knowledge gap is contingent upon one's level of issue-related motivational variables. Thus, the interplay between education and motivational variables is considered: for those with a high level of motivation, we expect a lesser degree of education-based knowledge gap than what we may observe among those with a low level of motivation. Thus, although the main effect of education on knowledge acquisition exists, when one's motivation level is high, it is expected that the effect of education on knowledge acquisition will be canceled out to a significant degree, thereby resulting in a negligible knowledge gap between high and low SES groups among highly motivated people.

The motivation-contingency model has the longest history of researchers' attention. The title of the very first article that raised the importance of motivational variables explicitly stated that it would deal with issues of *contingent conditions* for understanding of the knowledge gap (Ettema et al., 1977). However, in that study, the original concern was inappropriately hypothesized as meaning the rival explanation model, rather than the motivation-contingency model; consequently, studies that followed were mostly conducted in the context of the rival explanation model. A recent study formulated hypotheses pertinent to the motivation-contingency approach, but it fell short of testing the intended hypotheses (Viswanath et al., 1993). In short, there is a clear need to test this model.

The motivation-contingency model evolved and ironically disappeared in the same study by Ettema et al. (1977). The main argument of the article was that the transsituational deficit explanation (i.e., education) of the knowledge gap between high and low SES groups is not a sufficient one. The researchers did not rule out the impact of transsituational factors (p. 189-190), but they proposed that a situational explanation (i.e., motivational variables) should also be considered. They posited that the knowledge gap between SES groups may widen or narrow in particular circumstances. When lower SES persons are less motivated to acquire the information or the information is less functional for them, the gap will widen; when the motivation and perceived functionality of information is high among lower SES persons, the gap may narrow or even fail to materialize in the first place (p. 188).

One of their examples suggested that when the low SES group's motivation is higher than that of the high SES group, we may even expect a reversed knowledge gap (p. 187). Ettema and Kline (1977, pp. 182-183) re-interpreted the findings of Minnesota researchers (Donohue, Tichenor, & Olien, 1975; Tichenor, Rodenkershen, Olien, & Donohue, 1973) in the context of the motivation-contingency model. The Minnesota researchers' findings showed that the level of conflict generated by an issue resulted in differential SES-based knowledge gaps. A conflict-ridden issue, Ettema and Kline understood, makes an equalization of motivation to acquire the knowledge across all segments of the community, and an SES-based knowledge gap is less likely to occur when the motivation is equivalently heightened. In sum, analysis of situation-specific differences can reveal something about contingent conditions (p. 188).

Consequently, Ettema and Kline (1977) reformulated the knowledge gap hypothesis to embody these contingent conditions. However, as we will see, their reformulated knowledge gap hypothesis is one that provided a basis for the rival explanation model, not for the motivation-contingency model. They noted:

> As the infusion of mass media information into a social system increases, segments of the population motivated to acquire that information and /or for which that information is functional tend to acquire the information at a faster rate than those not motivated or for which it is not functional, so that the gap in knowledge between these two segments will increase rather decrease. (p. 188)

In this hypothesis, the effect of motivational variables (and perceived functionality) was proposed as a direct main effect, rather than as moderating the association between education and knowledge acquisition. The proposition that an SES-based gap is contingent upon people's motivational status was not even mentioned. Instead, what this hypothesis does is to transform an SES-based knowledge gap into a motivation-based knowledge gap, one of the main propositions of the rival explanation model.

The reformulated knowledge gap hypothesis in the motivation-contingency model should instead have been stated as follows:

> As the infusion of mass media information into a social system increases, segments of the population motivated to acquire that information and /or for which that information is functional tend to acquire the information at a faster rate than those not motivated or for which it is not functional, so that the gap in knowledge between high and low SES groups will decrease among those who are motivated or for whom the information is functional; the gap between SES groups will increase among those who are not motivated or for whom the information is not functional.

Only two studies can be reviewed as being relevant to the motivation-contingency model (Horstmann, 1991; Viswanath et al., 1993). Horstmann (1991) investigated people's knowledge acquisition in Germany. He tested whether education or motivational variables were responsible for the knowledge gain. His findings indicated that people's political participation was more significant predictor of knowledge acquisition than were education and another motivational variable, need for information. Horstmann tested interaction effects among variables, using education as a moderator variable. For political participation, there was no interaction effect; the effect of participation on knowledge acquisition was constant across different levels of education.

However, people's motivation to be informed demonstrated a systematic pattern. The effect of motivation on knowledge acquisition appeared to have increased as the level of education became lower (for the low education group, the beta coefficient was .25; for the medium education group, .21; and for the high education group, -.09). Although these findings failed to pass a significant test for some groups (only the beta for the low education group was marginally significant, with t = 1.92), the interaction between education and the motivation variable showed an expected pattern. That is, one's motivation modified the impact of education on knowledge acquisition such that the education-based knowledge gap decreased when those with a lower education level had a higher level of motivation.

Viswanath et al. (1993) proposed a couple of hypotheses that precisely addressed the motivation-contingency model. Their first hypothesis was that knowledge gaps are less likely and may narrow over time among a group that is more motivated to acquire the information. Their second hypothesis was that knowledge gaps are more likely and may widen over time among a group that is less motivated. In short, these hypotheses proposed the motivational variable as a moderator variable that makes the education-based knowledge gap more likely within the low motivation group and less likely within the high motivation group. However, Viswanath and his colleagues do not seem to have conducted adequate analyses to test the hypotheses. Reanalysis of their findings presented below, however, will clearly suggest the interaction of the motivational variable with education levels.

Two types of knowledge, on dietary fat and dietary fiber, were investigated in the original study. The latter type of knowledge showed unexpected patterns in several aspects (see, pp. 558-559, for the authors' explanations). Thus, the findings regarding dietary fat will be discussed here.

Table 1 About Here

Table1 shows the results, as they were reported in the original study (Viswanath et al., 1993). The more motivated group, which was composed of those who self-selected to receive home-based learning from a health campaign, was compared to general population samples, the group with the smaller degree of motivation. To test the contingent effects of motivation at a given time, we need to analyze whether interaction terms between education and motivation (i.e., education x motivation at T1 and T2) are significant at each time. We expect that the coefficient should be negative, such that the effect of education is larger for the low motivation group and vice versa. Over time, we need to investigate whether the over-time increase of the education-based knowledge gap is different across motivation levels (i.e., education x time x motivation). We expect that the over-time increase of the gap is greater for the low motivation group than for the high motivation group.

In addition to the three main variables, education, time, and motivation, all of which were significant, three interaction terms were analyzed: motivation x time, education x time, and education x motivation. When interaction terms were tested, scores of a non-considered third variable were collapsed. Thus, for example, the results for the motivation x time interaction term were collapsed over education levels. Only one interaction term, motivation x time was significant. This finding indicates that the influence of motivation on knowledge acquisition increased over time when people's education levels were not differentiated. The insignificant interaction terms indicate that the education-based knowledge gap did not increase over time when people's motivation levels were not considered, and that the education-based gap did not differ across motivation levels when the two waves' data were combined.

Two problems are eminent in the study by Viswanath and his colleagues. First, whether the education-based knowledge gap depends on the level of motivation at a given time (T1 or T2) was not analyzed. This proposition could have been investigated by analyzing the education x group interaction term *separately* for each wave. As derived from Table 1, at T1 the education-based knowledge gap for the low motivation group is .97, and for the high motivation group, it is

.57. At T2, the scores are .62 and 1.45 for the high motivation and low motivation groups, respectively. These knowledge scores indicate that, particularly at T2, the stronger impact of education x motivation might be concealed by combining the two waves' data.

Second, whether the education-based knowledge gap narrowed or widened over time depending on the level of motivation was not tested, either. Although Viswanath et al. concluded that the knowledge gap between the more and the less educated remained stable in each motivation group over time (p. 556), their conclusion was based on the insignificant impact of education x time. However, for this interaction term the different levels of motivation were not considered. Thus, while it is correct that there was no significant over-time increase in the knowledge gap between the more and the less educated people (education x time), whether or not the education-based knowledge gap widened over time for less-motivated people (education x time x motivation) still remains to be answered.

Figure 1 About Here

When we re-analyze the results on the basis of the motivation-contingency model, the over-time pattern becomes clearer (see Figure 1). The over-time difference of the education-based knowledge gap for the high motivation group is 0.15 (from .57 at time 1 to .62 at time 2; 8.8% increase); the over-time difference for the low motivation group is .48 (from .97 to 1.45; 50% increase). Clearly, this difference indicates that the education-based knowledge gap increased for the low motivation group, while that for the high motivation group stayed constant, thereby suggesting that the education-based knowledge gap increased contingent on the level of motivation. Collapsing the two waves' scores seems to make little difference for the high motivation group, because the gap between high- and low-educated people barely changed. However, for the low motivation group, the non-differentiation of the two waves' scores might have made it impossible to detect a significant over-time increase in the gap.

In terms of the relationship between education and motivational variables in explaining knowledge acquisition, it may now appear that previous studies have failed to give adequate attention to the motivation-contingency model. The findings in the studies by Horstmann (1991) and Viswanath et al. (1993), which were reanalyzed here, indicate that the motivation-contingency model is empirically plausible. The first hypothesis of this study thus attempts to test the motivation-contingency model:

> H1: The knowledge gap between high and low SES groups will depend on people's motivational level such that the gap is more likely to exist among those with less motivated people than among those with more motivated people.

*Education and Media Use*

Media publicity has been one of the key concepts in the knowledge gap hypothesis (Viswanath et al., 1996). Researchers have investigated various types of media publicity contexts, from a sudden publicity increase on an issue (e.g., Faithi, 1973; Greenberg, 1964) to the well-organized publicity of a health information campaign (e.g., Ettema et al., 1983). Many of the previous studies had a greater interest in the outcome of the media publicity (i.e., the existence of the knowledge gap or increase/decrease of the knowledge gap) than in the process by which people actually utilized the publicity generated by the media (Bailey, 1971; Brantgarde, 1983; Douglas, Westley, & Chaffee, 1970; Ettema et al., 1983; Genova et al., 1979; Lovrich et al., 1984; Moore, 1987; Viswanath et al., 1993).

At least two limitations of these studies have been noted. First, the mere fact that differential growth in knowledge exists between education groups does not prove that this differential growth is caused by the media (Kleinnijenhuis, 1991, pp. 499-500). Second, the lack of information regarding people's actual media use makes it impossible to generate recommendations for the media in terms of improving the equivalence of knowledge distribution (Wirth, 1996).

Studies have found that an education-based gap exists among newspaper readers to a greater degree than among nonreaders (Gaziano, 1984). Kleinnijenhuis (1991) also observed that higher educated people's greater capacity to process complex and compactly written newspaper news resulted in their greater knowledge acquisition. Theoretical reasons for the contribution of print media to the knowledge gap between high- and low-educated people have been suggested (McLeod et al., 1994; Tichenor et al., 1970).

In regard to TV users, studies have found non-significant knowledge differences between high and low education levels (Kleinnijenhuis, 1991; McLeod et al., 1979; Neuman, 1976; Shingi & Mody, 1976). Miyo (1983) found that, among television-dependent persons, the knowledge gap due to education gradually narrowed as time passed. Recently, analyzing 1996 American National Election Survey data, Eveland and Scheufele (1998) reported that television news use appeared to reduce the gap between education groups. In fact, the TV-as-knowledge-leveler proposition was put forth by early researchers (Tichenor et al., 1970). However, findings regarding TV use may be inconclusive, because some of these results may be due to simple knowledge measurement (Shingi et al., 1976). Overall, the previous findings are supportive of TV's role in narrowing the education-based knowledge gap.

On the basis of the above discussion regarding the roles of newspapers and TV in the phenomenon of the knowledge gap, the following hypotheses were formalized:

H2a: The knowledge gap between high and low SES groups will depend on one's newspaper use such that the gap is more likely to exist among those with a greater use of newspapers.

H2b: The knowledge gap between high and low SES groups will depend on one's TV use such.that the gap is less likely to exist among those with a greater use of TV.

*Education, Media Use, and Motivation?*

Hypotheses 1 and 2 respectively posited motivation and media use as moderating the relationship between SES and knowledge acquisition. Considering these hypotheses together, we may further question whether or not motivation and media use interact with each other in explaining the knowledge gap between high and low SES groups. More specifically, we may extend the inquiry by investigating whether or how people's motivation modifies the extent to which their media use influences the knowledge gap between high and low SES groups.

Reviewing previous studies that addressed the interaction between education and media use in the phenomenon of the SES-based knowledge gap, Gaziano (1997) argued that studies need to clarify the roles of media use in the knowledge gap phenomenon. In addition to the analysis of media use as a moderator variable (i.e., H2a and H2b), the investigation of the interaction between media use and motivation may reveal more subtle roles of the media. Given that previous studies have emphasized the importance of motivation in the knowledge gap between SES groups, whether or not the impact of media use on the knowledge gap is constant across motivation levels deserves empirical attention. Thus, the following research question was constructed:

> RQ: Do motivational variables modify the effect of media use on the knowledge gap between high and low SES groups? If they do, how is the effect of media use different across motivation groups?

## Methods

### *Sample*

A sample of 421 adult residents of Dane County, Wisconsin was telephone-interviewed during the 1992 presidential election campaign. The interviews were conducted in late October. The data were originally gathered by the Mass Communications Research Center at the University of Wisconsin-Madison (McLeod, Guo, Daily, Steele, Huang, Horowitz, & Chen, 1996).

### *Operationalization*

*Education*. As many previous studies had done, one's education level was used as an indicator representing her/his SES. Respondents were asked the highest year of school they had completed.

*Motivation*. Two types of motivational variables were used: issue interest (Genova et al, 1979; McLeod et al., 1994) and behavioral involvement (Bailey, 1971; Horstmann, 1991). Issue interest was measured by respondents' interest in following the current presidential campaign; it was measured on a 10-point scale. To measure behavioral involvement, respondents were asked about four types of electoral participation: whether they had contributed money to a political party or candidate; worn a campaign button or displayed a bumper sticker; tried to persuade someone to vote as they planned to vote; or attended a campaign rally or dinner. Scores for these questions were combined as one index; alpha is .60.

*Media use*. In order to measure the degree of respondents' media use, both exposure and attention questions were used for TV and newspapers. Respondents were asked the extent to which they read international, national, and local news in newspapers and the degree to which they paid attention to these contents. Respondents were separately asked for each type of content, and answers were combined to form a single exposure and a single attention measure. Alphas are .82 for both newspaper exposure and attention indexes.

For TV use, respondents were asked the extent to which they watched national news, local news, and news magazine programs and the degree to which they paid attention to international, national, and local news. A single index was constructed for both exposure and attention measures. Alphas are .73 for TV news exposure and .85 for TV news attention.

*Interaction terms*. Several two-way and three-way interaction terms were constructed. To reduce potential problems with multicollinearity, all the independent variables were centered prior to the formation of the interaction terms (Cronbach, 1987; Eveland, 1997; Jaccard, Turrisi, and Wan, 1990). That is, an additive transformation was conducted for each independent variable by subtracting the mean value of each variable from the original score.

*Control variables*. Demographic variables such as age, gender and income, and partisanship strength were used as control variables.

## Results

Table 2 shows the results from a hierarchical regression analysis where one's knowledge score was regressed on education, motivational variables, and interaction terms between education and motivational variables. After controlling for four control variables, which accounted for 4.32% of the total variance of the dependent variable ($p<.01$), both education and motivational variables were found to be significantly related to the knowledge score. After the control, the R2 of education (Beta = .29, $p<.001$) was almost close to 8.0% ($p<.001$); after controlling for control variables and education, campaign interest (Beta = .32, $p<.001$) and behavioral involvement (Beta = .20, $p<.001$) together explained 11.44% of the variance of one's knowledge score ($p<.001$), with both motivation variables being significant predictors.

Table 2 About Here

The first hypothesis posited that the education-based knowledge gap will depend on people's motivational level such that the gap is more likely to exist among those groups with less motivated people than among those with more motivated people. As hypothesized and shown in Table 2, one's behavioral involvement in the campaign appears to have significantly moderated the relationship between education and knowledge acquisition (Beta = -.12, $p<.01$). The negative association indicates that the effect of education on knowledge acquisition was weaker for those with a higher degree of behavioral involvement in the campaign. In other words, the knowledge gap due to education became significantly smaller as one's behavioral motivation became higher. However, the multiplicative term of education x campaign interest was found to be nonsignificant (Beta = -.03), which indicates that the effect of education on knowledge acquisition did not depend on one's campaign interest. As a block, the incremental R2 of the interaction terms was significant (1.26%, $p<.05$), mostly due to the contribution of the interaction term, education x behavioral involvement.

A separate regression that replaced motivational variables with media variables was run, and the findings are shown in Table 3. After controlling for control variables and education, one's media use significantly explained one's knowledge score (R2 = 4.32%, $p<.001$), with newspaper exposure (Beta = .19, p<.001), newspaper attention (Beta = .21, p<.001), and TV attention (Beta = .10, p<.05) being significant.

Table 3 About Here

As hypothesized (H2b), the impact of education on knowledge score was found to depend on how much one watched TV news. The interaction term between education and TV exposure was significant and negative (Beta = -.11, p<.05), which indicates that the education-based knowledge was smaller among frequent TV news viewers than among infrequent viewers. However, the other interaction terms between media variables and education received little support. The incremental R2 of the media block was not significant; but, when an alternative regression was run with only the significant multiplicative term, education x TV exposure, the incremental R2 of the two-way interaction term was significant after four control variables and four media variables were considered (Inc. R2 = 1.2%, p<.05).

This paper posed a research question regarding the relationship among education, motivation, and media use in explaining one's knowledge level. In order to answer this question, a hierarchical regression with the total of eight three-way interaction terms was run. Before entering these three-way interaction terms, all the main effects and the contribution of all the two-way interaction terms were considered. The findings in Table 4 thus indicate the results obtained after controlling for four control variables, seven main independent variables (education, two motivational variables, and four media use variables), and 14 two-way interaction terms[1].

Table 4 About Here

As Table 4 shows, the three-way interaction term education x campaign interest x newspaper attention was found to be significant (Beta = -.11, p<.01), and education x campaign interest x newspaper exposure was marginally significant (Beta = -.08, p<.1). The other three-way interaction terms failed to reach a significant level. One interpretation of the significant three-way interaction term education x campaign interest x newspaper attention is that how one's newspaper attention moderated the relationship between education and knowledge acquisition significantly depended on the extent to which the person was interested in the campaign. In other words, the influence of one's newspaper attention on the education-based knowledge gap depended on one's campaign interest.

In order to illustrate the significant three-way interaction effect more concretely, some modifications were made. First, all the independent variables were linearly transformed so that the score of each variable ranged from zero to one (for similar approaches, see Kleinnijenhuis, 1991 and Marcus and MacKuen, 1993). Second, a separate regression was run with a reduced model that included control variables; main independent variables which formed the significant three-way interaction term in the full model (i.e., education, campaign interest, newspaper attention); three two-way interaction terms between these independent variables (education x campaign interest, education x newspaper attention, and campaign interest x newspaper attention); and the three-way interaction term (i.e., education x campaign interest x newspaper attention). While these modifications make the simpler computations below, there is little difference between the full model and the reduced in terms of the adjusted R2s (26.3% for the full model and 23.4% for the reduced model) and the direction of coefficients.

The regression analysis with the reduced model produced the following final equation. All the coefficients indicate unstandardized regression coefficients.

Knowledge
= 4.4 -.40 Gender - .44 Age + .10 Income + .18 Party identification strength
- 5.72 Education - 4.53 Campaign interest - 5.81 Newspaper (NP) attention
+ 12.24 Education x Campaign interest + 13.43 Education x NP attention
+ 9.42 Campaign interest x NP attention
- 17.99 Education x Campaign interest x NP attention

Depending on whether one's interest in the campaign is high or low, two separate regression equations for each group can be derived. The theoretically highest value, 1, and the theoretically lowest value, 0, were assigned to differentiate these two groups. Also, mean values were assigned for control variables. Thus, the regression equation for those with high campaign interest is:

$$\text{Knowledge} = -.33 + 6.52\ \text{Education} + 3.61\ \text{NP attention} - 4.56\ \text{Education} \times \text{NP attention}$$

For those with low campaign interest, the regression equation is:

$$\text{Knowledge} = 4.2 - 5.72\ \text{Education} - 5.81\ \text{NP attention} + 13.43\ \text{Education} \times \text{NP attention}$$

With these two regression equations for the two groups with high and low campaign interest we can plot the relationship between education and newspaper attention. Those figures are presented in Figures 2 and 3.

Figures 2 and 3 About Here

In both Figures 2 and 3, two groups are compared depending on their education levels and the degree of their attention to newspapers. For both variables, the "high" group indicates those whose score is one standard deviation higher than the overall mean; the "low" group indicates those whose score is one standard deviation lower than the overall mean.[2]

As Figure 2 shows, when one's campaign interest was low, the knowledge gap between high and low education groups widened as one's attention to newspaper news increased. Close reading of newspapers seems to have benefited those with high education to a greater degree. However, when one's campaign interest was high (Figure 3), the knowledge gap between high and low education groups narrowed as one became a more attentive reader. While those with high education indicated a high level of knowledge from the beginning and benefited little from an attentive reading of newspaper news, those with low education improved their knowledge level by paying close attention to newspaper news.

Therefore, Figures 2 and 3 clearly show that one's campaign interest modifies how newspaper reading influences the knowledge gap between high and low education groups. When one's campaign interest is high, closer reading of newspaper news makes the education-based knowledge gap smaller. On the other hand, when one's campaign interest is low, newspaper reading further contributes to the knowledge gap between education groups.

## Discussion

The findings of this study support the significance of motivational variables and media use in modifying the relationship between education and knowledge acquisition. People's behavioral involvement in the 1992 presidential campaign influenced the knowledge gap due to education such that the gap was significantly smaller among those with a higher level of involvement than among those with a lower level of involvement. Also, respondents' TV news viewing during the campaign significantly reduced the knowledge gap between education groups; thus, the more frequently people watched news stories on TV, the smaller the impact of education on knowledge acquisition.

In order to assess the extent to which behavioral involvement and TV viewing reduced the knowledge gap between education groups, I re-analyzed the data after linearly transforming the original data so that independent variables had values varying between 0 and 1. Two regression analyses, one with two motivational variables as moderator variables and another with four media use variables as moderator variables, were conducted.[3] The final unstandardized regression coefficients in the former regression analysis were 4.42 for education and -4.82 for the interaction term education x behavioral involvement. In the latter analysis, the final unstandardized regression coefficients were 5.60 for education and -6.27 for education x TV news exposure. These coefficients indicate that when people had had the highest level of behavioral involvement or the highest level of TV news exposure in the campaign (for both variables, the theoretically highest score is one), the impact of education on knowledge acquisition would have been canceled out. In other words, the knowledge gap between education groups was contingent upon one's behavioral involvement and TV news viewing.

This study posited a research question that asked whether there was a significant three-way interaction among education, media use, and motivation. The results showed that there was a significant three-way interaction among education, campaign interest, and newspaper attention, which indicates that how newspaper attention contributed to the knowledge gap between education groups differed depending on respondents' campaign interest. When campaign interest was high, closer attention to newspaper news led to a narrower knowledge gap between education groups. When campaign interest was low, closer attention to newspaper news contributed to a wider knowledge gap between education groups. When each variable was separately investigated, both newspaper attention and campaign interest failed to receive support in terms of moderating the relationship between education and knowledge acquisition (see Tables 2 and 3). However, the analysis of the interaction between newspaper attention and campaign interest in moderating the education-based knowledge gap revealed the significant roles of these variables, roles which otherwise were concealed. Future research may need to further investigate the relationship between motivational variables and media use in the knowledge gap phenomenon.[4]

This study used cross-section data. However, in order to fully test the propositions derived from the knowledge gap hypothesis, one needs to investigate how the knowledge gap between education groups varies over-time when influenced by various factors. That this study is based on cross-sectional data may not undermine the significance of the findings in this study, but replication of these findings with longitudinal data will certainly strengthen the validity of the current findings.

## Endnotes

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[1] education x campaign interest, education x behavioral involvement, education x NP exposure, education x NP attention, education x TV exposure, education x TV attention, campaign interest x NP exposure, campaign interest x NP attention, campaign interest x TV exposure, campaign interest x TV attention, behavioral involvement x NP exposure, behavioral involvement x NP attention, behavioral involvement x TV exposure, and behavioral involvement x TV attention.

[2] The regression equations used to make Figures 2 and 3 are as follows. For the high campaign interest group, if one's education level is high, Knowledge = 5.02 - .13 Newspaper attention; for the low education group, Knowledge = 3.19 + 1.15 Newspaper attention. For those with low campaign interest, if one's education level is high, Knowledge = -.49 + 5.20 Newspaper attention; if one's education level is low, Knowledge = 1.11 + 1.44 Newspaper attention.

[3] These post-hoc analyses were equivalent to those presented in Tables 2 and 3 in terms of variables included in each analysis. Since the transformation was additive, there was no substantial difference between the original and the post-hoc analyses.

[4] The importance of motivational variables has been emphasized in other communication theories. For example, see Wanta (1997) for a related discussion from a perspective of the agenda-setting theory.

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Table 1
Mean Scores of Dietary Fat Knowledge

| | T 1 (baseline) | | T 2 (12 months) | |
|---|---|---|---|---|
| | Low Ed. | High Ed. | Low Ed. | High Ed. |
| General population | 4.54 | 5.51 | 4.37 | 5.82 |
| Self-selected group | 4.71 | 5.28 | 6.03 | 6.65 |

Source: Viswanath et al. (1993).

## Table 2
## Hierarchical Regression Analysis of Knowledge Score: Education and Motivation

| Variable | Beta | t-value | Inc. R2 |
|---|---|---|---|
| Gender (female : high) | -.14** | -2.82 | |
| Age | -.05 | -1.12 | |
| Income | .10* | 2.16 | |
| Partisanship Strength | .09# | 1.92 | 4.32%** |
| Education | .29*** | 6.13 | 7.95%*** |
| Campaign Interest | .32*** | 7.23 | |
| Behavioral Involvement | .20*** | 4.18 | 11.44%*** |
| Ed x Campaign Interest | -.03 | -0.67 | |
| Ed x Behavioral Involvement | -.12** | -2.63 | 1.26%* |
| Final R2 | | | 25.0%*** |

Notes

1. # p<.1; p<.05; ** p<.01; *** p<.001
2. Betas refer to regression coefficients prior to entry.
3. N = 421

Table 3
Hierarchical Regression Analysis of Knowledge Score: Education and Media Use

| Variable | Beta | t-value | Inc. R2 |
|---|---|---|---|
| Gender (female: high) | -.14** | -2.82 | |
| Age | -.05 | -1.12 | |
| Income | .10* | 2.16 | |
| Partisanship Strength | .09# | 1.92 | 4.32%** |
| Education | .29*** | 6.13 | 7.95%*** |
| Newspaper Exposure | .19*** | 3.99 | |
| Newspaper Attention | .21*** | 4.59 | |
| TV Exposure | .05 | 1.13 | |
| TV attention | .10* | 2.17 | 4.21%*** |
| Ed x Newspaper Exposure | -.04 | -0.64 | |
| Ed x Newspaper Attention | -.03 | -0.86 | |
| Ed x TV Exposure | -.11* | -2.44 | |
| Ed X TV attention | -.04 | -0.83 | 1.35% |
| Final R2 | | | 17.9%*** |

Notes
1. # p<.1; p<.05; ** p<.01; *** p<.001
2. Betas refer to regression coefficients prior to entry.
3. N = 421

Table 4
Hierarchical Regression Analysis of Knowledge Score: Education, Motivation, and Media Use

| Variable | Beta | t-value |
|---|---|---|
| Ed x Campaign Interest x NP Exposure | -.08# | -1.63 |
| Ed x Campaign Interest x NP Attention | -.11* | -2.11 |
| Ed x Campaign Interest x TV Exposure | .01 | .12 |
| Ed x Campaign Interest x TV Attention | -.08 | -1.53 |
| Ed x Behavioral Participation x NP Exposure | .05 | 1.00 |
| Ed x Behavioral Participation x NP Attention | .05 | 1.02 |
| Ed x Behavioral Participation x TV Exposure | .07 | 1.54 |
| Ed x Behavioral Participation x TV Attention | .07 | 1.53 |

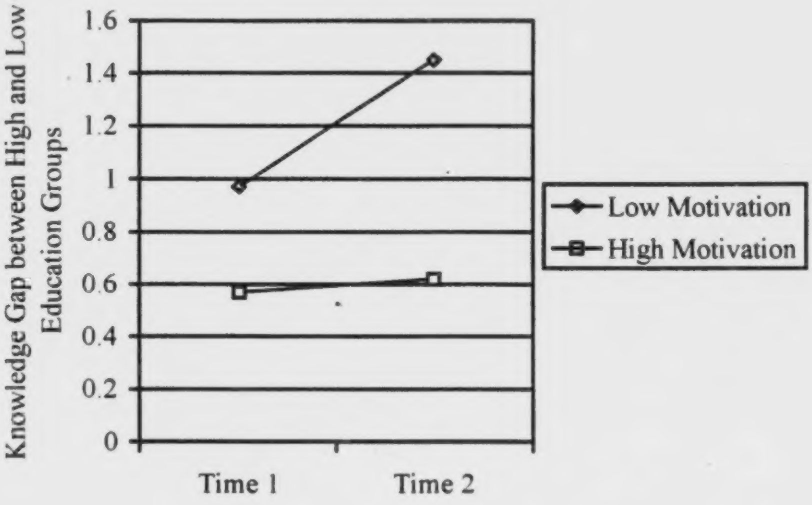
Notes

1. # p<.1; p<.05; ** p<.01; *** p<.001

2. Betas refer to regression coefficients prior to entry, after controlling for four control variables, seven independent variables (education, two motivational variables, and four media use variables), and 14 two-way interaction terms (education x campaign interest, education x behavioral involvement, education x NP exposure, education x NP attention, education x TV exposure, education x TV attention, campaign interest x NP exposure, campaign interest x NP attention, campaign interest x TV exposure, campaign interest x TV attention, behavioral involvement x NP exposure, behavioral involvement x NP attention, behavioral involvement x TV exposure, and behavioral involvement x TV attention).

3. N = 421

Figure 1
Over-time Influence of Motivation on the Knowledge Gap between Education Groups



Note: This figure is produced on the basis of findings reported in Viswanath et al. (1993).

Figure 2
Influence of Newspaper Attention on the Knowledge Gap between Education Groups
Among Those with Low Campaign Interest

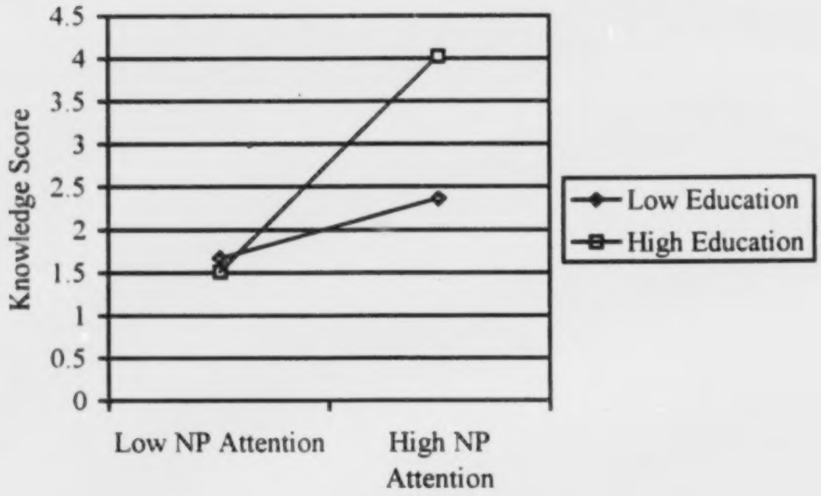
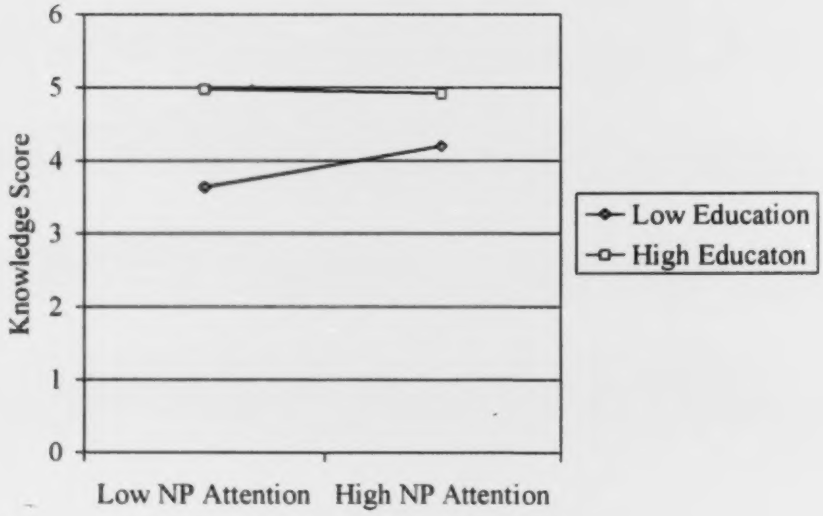


Figure 3
Influence of Newspaper Attention on the Knowledge Gap between Education Groups Among Those with High Campaign Interest



# Predicting Future Risky Behavior Among Those "Too Young" to Drink as the Result of Advertising Desirability

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# Abstract

A convenience sample of 273 children in Washington state investigated the validity of a predrinking behavior index as a behavioral outcome to assess media effects on precursors to drinking among children for whom alcohol consumption is not yet occurring. It also examined age trends in relevant beliefs and behaviors. Perceptions of advertising desirability increased steadily from third to ninth grade, whereas identification with portrayals leveled off after sixth grade. Expectancies also increased with age, particularly between sixth and ninth grade. With demographics controlled, desirability predicted identification, and both predicted expectancies, consistent with media decision-making theory. Expectancies correlated with alcohol predrinking behavior and predicted risky behavior with demographic controls. Predrinking behavior and reported risky behavior also related positively.

# Predicting Future Risky Behavior Among Those "Too Young" to Drink as the Result of Advertising Desirability

Research suggests that the media can make children more vulnerable to alcohol experimentation (Aitken, Eadie, Leathar, McNeill & Scott, 1988; Atkin, Hocking & Block, 1984; Austin & Johnson, 1997b; Grube & Wallack, 1994). Causation has been difficult to demonstrate, however, because many cognitions that predict drinking develop prior to first use (Austin & Johnson, 1997b; Miller, Smith & Goldman, 1990; Wallack, Cassady & Grube, 1990) and most data are correlational (Austin & Nach-Ferguson, 1994; Grube & Wallack, 1994; Wallack, et al., 1990). This study, therefore, examines relationships among children's age, their beliefs about advertising messages, their expectancies for drinking, behavioral precursors to drinking, and self reported risky behavior.

A good deal of research suggests that children begin making decisions about alcohol at a young age, with precursors to drinking in place, though not unchangeable, by the elementary school years (e.g., Austin & Johnson, 1997b; Miller, Smith & Goldman, 1990; Wallack, Cassady & Grube, 1990). Research also has suggested that children's decisions about media messages have important implications for the ways they make decisions about drinking alcoholic beverages (e.g., Austin & Meili, 1994; Grube & Wallack, 1994). In particular, it appears that the media can make children more vulnerable to future alcohol experimentation because children do not develop adult-level comprehension skills for media messages until about eighth grade (Collins, 1983), which is after many children have begun to drink alcohol.

Several recent research projects have shown that children as young as seven already are well engaged in decision making about alcohol and point to the role of televised alcohol advertising in this decision-making process (Austin & Nach-Ferguson, 1995; Austin & Johnson, in press; Wallack et al., 1990; Miller et al., 1990). Miller, et al. (1990) argue that because children by around third grade have acquired better communication skills just as they are becoming more attuned to social norms and peer influence, they are better able to understand messages, such as those in the media, but simultaneously less able to resist them. Exposure and attention to beer commercials correlates with brand knowledge and positive attitudes toward alcohol (Aitken, Leathar & Scott, 1988; Wallack, Cassady & Grube, 1990; Austin & Nach-Ferguson, 1995). Perceptions of and admiration for alcohol advertising have been found to predict children's intentions to drink earlier and engage in problem behaviors such as binge drinking (Austin & Meili, 1994).

## The need for behavioral outcomes

Despite this plethora of findings, research in this area has been weakened by the lack of strong behavioral measures that would link exposure to media portrayals of alcohol, such as advertising, to drinking behavior among children. Prevention research would benefit from a behavioral measure that demonstrates an unambiguous link between children's exposure to alcohol advertising and their later drinking behavior. Measuring the precursors to drinking behavior would provide a way to determine whether advertising effects on attitudes and beliefs at a young age represent any real risk to children as they grow older and more likely to engage in actual drinking behavior. A valid precursor, however, has not been established.

This is not an unresolvable situation if researchers in the venue of substance abuse follow the lead of researchers who have tackled similar challenges in the study of the media and aggression. In the study of television violence effects, for example, ethical concerns would prohibit a researcher from giving children knives and guns in order to see whether viewing televised violence makes them more likely to knife or shoot their playmates. Similarly, we cannot offer third graders shots of whiskey or cans of beer to see if they might be more likely to have a drink after watching televised beer advertisements. Nevertheless, by paralleling the procedures used to study aggressive behavior in the media effects literature (Liebert & Sprafkin, 1988), however, we can be somewhat creative. For example, to study aggression researchers have measured activities such as popping of balloons, aggressive play with toys, and choice of toy, with more aggressive toys considered a measure of more aggressive tendencies in the child.

Similarly, play behavior can be measured in children to assess their affinity for alcohol. Marketers have been producing a number of products emblazoned with alcohol logos which could appeal to children. These items include beach towels, piggy banks, toy trucks, salt and pepper shakers, hats, t-shirts, kazoos, model airplanes, beach balls and basketballs. Children's desire to own such items could indicate an affinity for alcohol products that later may be translated into actual use of alcohol products. An alternative behavioral measure based on children's desire to own products with alcohol logos has been developed and tested successfully to represent children's receptivity to alcohol (Austin & Johnson, 1997a, 1997b), but to date it has not been tested for its predictive validity relative to actual drinking behavior. This study, therefore, pursues this possibility in the context of a theoretical model that has been tested with children of predrinking age to assess their decision-making strategies applied to media message and alcohol.

The theoretical model that has been used, called the Message Interpretation Process Model (Austin & Johnson, 1997b), suggests that children actively process messages with strategies based partially on logic and partially on emotion or wishful thinking. The theory, based on social cognitive theory (Bandura, 1986) and decision-making theory (Beyth-Marom, Fischhoff, Jacobs, Quadrel and Furby, 1991) holds that a progression of logic-based decisions gradually leads to conclusions about expectancies and behavioral intentions. It also suggests that desirability, the perceived attractiveness of a portrayal, can overwhelm more logically based decision-making criteria by directly influencing the degree to which a child wants to emulate a portrayal, which then leads to expectancies, which then lead to behavior (Austin & Johnson, 1997b; Austin & Nach-Ferguson, 1995; Austin & Johnson, 1997a; Austin & Meili, 1994). Advertising constructed to maximize product desirability thus poses particular risks for the child whose decision-making processes have not yet fully matured (Austin & Johnson, 1997a, 1997b; Miller, et al., 1990).

## Children's processing of media messages

Critical viewing of mass media messages requires the ability to pay attention selectively, to understand implicit as well as explicit information, to understand the perspective and intentions of programmers and characters, and to understand the meaning behind production techniques (Dorr, 1980). Researchers suggest that children do not develop adult-level comprehension skills until about eighth grade (Collins, 1983), with middle childhood representing a critical period for decision making about a variety of topics, including alcohol (Elias, Branden-Muller & Sayette, 1991; Miller, et al., 1990). In middle childhood, children are developing better communication skills just as they also are becoming more concerned with social norms, making them better able to understand but less able to resist persuasive messages.

Media effects research has established that children nevertheless are not persuaded by every media message. Mediators of effects include perceptions of realism (Reeves, 1978; Hawkins & Pingree, 1982), similarity, and identification with characters (Reeves & Garramone, 1989; Austin, Roberts & Nass, 1990). Imitation tends to increase with frequent exposure to consistent messages (Gerbner, Gross, Morgan & Signorielli, 1986), and with messages reinforced in real life (DeFleur & Ball-Rokeach, 1982; Austin et al., 1990) and by significant others (Austin et al., 1990; Austin & Meili, 1994). Television also becomes a more influential source for topics when children get little information from other sources (Rosengren & Windahl, 1972; Miller & Reese, 1982).

Key variables in the message interpretation process, therefore, include perceptions of message desirability and the degree to which viewers identify with portrayals. The Message Interpretation Process (MIP) model, for example, holds that internalization of a television portrayal occurs at a number of increasingly rigorous levels. Once identification has been established, expectancies develop which in turn guide future behavior (Austin & Johnson, 1997a, 1997b; Austin & Meili, 1994). Desirability of a portrayal can be a powerful influence on identification.

**The role of media messages in decision making about substance use**

The majority of children do not begin drinking alcohol until the preteen or teen years, but precursors of substance use behavior, such as beliefs about media portrayals' desirability, are already well under development by the third grade. In fact, attitudes towards drinkers exist by age six (Spiegler, 1983). In addition, several recent research projects have shown that children as young as seven already are well engaged in decision making about substance use and point to the role of televised advertising in this decision making process (Austin & Nach-Ferguson, 1995;

Austin & Johnson. 1997a. 1997b; Wallack et al., 1990; Miller et al., 1989). Finally, identification with portrayals and expectancy development are well under way by third grade, although few children have begun experimenting with entry-level drugs such as alcohol or tobacco. The MIP model, however, theorizes that decisions that influence expectancy development, such as determinations of desirability, identification and expectancies, eventually will lead to decisions about actual behavior once opportunity and desire converge.

It is reasonable, therefore, to expect that as children grow older, and statistically more likely to engage in drinking behavior, their beliefs about alcohol will become more positive as well. Exposure and attention to commercials correlates with brand knowledge and positive attitudes toward alcohol (Aitken, Leathar & Scott, 1988; Wallack, Cassady & Grube, 1990; Austin & Nach-Ferguson, 1995). In addition, perceptions of and admiration for alcohol advertising predicts children's intentions to drink earlier and engage in problem behaviors such as binging (Austin & Meili, 1994).

H1: Children's beliefs regarding alcohol will be more favorable as grade level increases, as measured by desirability, identification and expectancies.

H2: Children will exhibit more behavior representative of alcohol use as grade level increases, as measured by their toy preference and self-reported frequency of risky behavior.

Consistent with the MIP model and expectancy theory, it is appropriate to expect that children's expectancies will be positively predicted by desirability and identification. Specifically, the model holds that desirability should predict identification, which should predict expectancies, which should predict behavior. A survey of 154 at-risk adolescents, for example, found that identification predicted behavioral intentions for alcohol use, with perceived desirability of messages predicting identification (Austin & Meili, 1994).

H3: Children's expectancies towards alcohol will be positively predicted by desirability and identification.

Finally, the study will test the proposition that, as with the study of media effects on children's aggression, children's preferences for products displaying alcohol logos will be representative of children's actual drinking behavior, among those old enough to report actual drinking activity related to alcohol.

H4: Alcohol predrinking behavior will be positively predicted by children's expectancies towards alcohol.

H5: Risky behavior will be positively predicted by children's expectancies towards alcohol.

H6: Risky behavior will be positively relate to alcohol predrinking behavior.

## Method

### Sample

A convenience sample of 273 third, sixth, and ninth graders in two Washington state communities included 48.7% boys and 50.2% girls. A parent survey indicated that respondents' income was higher than the median income for the state (63% made more than $50,000/year), while the majority were white (90%), an ethnic representation consistent with the population of the state (U.S. Bureau of the Census, 1995). The use of multiple classrooms ensured that results were not due to teacher-specific effects. The survey was a pencil and paper questionnaire. The questions were read aloud to the third graders.

### Measures

**EXPECTANCIES**--Respondents' expectancies for alcohol, beliefs of positive outcomes associated with drinking, were measured by a six-item index (Austin & Johnson, 1997b; Austin & Meili, 1994), with acceptable reliability (alpha=.77) on a scale ranging from yes, always (5) to no, never (1). Statements included drinking beer helps you seem more grown up, helps you have fun, helps make you happy, helps you make friends, helps make sports activities fun, and helps you fit in. Table 1 displays the descriptive statistics for all variables used in the analysis.

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Table 1 About Here

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**IDENTIFICATION**--Identification with, or the desire to be like, media portrayals was assessed by three items (Austin & Johnson, 1997b; Austin & Meili, 1994), on a scale ranging from yes, always (5) to no, never (1), with acceptable reliability (alpha=.70), including I wish I could be like people on TV, be like people in TV ads, and live my life like people in ads.

**DESIRABILITY**--An index (Austin & Johnson, 1997b; Austin & Meili, 1994), with acceptable if somewhat low reliability (alpha=.65) assessed the degree to which people in beer and wine ads appear to be positive role models, on a scale ranging from yes, always (5) to no, never (1). Children reported whether they thought people in beer and wine are seemed "popular" and "smart," whether women in beer and wine ads are good looking, and whether men in beer and wine ads are strong.

**RISKY BEHAVIOR**--Self-reported risky behavior, confirmed as a sufficiently reliable measure (Johnson, O'Malley & Bachman, 1994), was assessed using three measures of use for legal substances, which together provided a more reliable estimate of risk taking than any single measure would among those whose behavior patterns are still developing: cigarette smoking, use of chewing tobacco, and drinking alcohol (alpha=.63). These data were collected only from sixth and ninth graders on a scale ranging from never used (1) to use about every day (6).

**ALCOHOL PREDRINKING BEHAVIOR**--An alternative behavior measure has been developed for use among children not yet making drinking decisions, based on the research literature on the effects of televised violence on aggression in children. The measures have been previously tested and peer reviewed (Austin & Johnson, 1997a, 1997b). Preferences for products exhibiting beer or soda pop logos were determined among third and sixth graders based on the presentation of six items which respondents rated on a scale of 1-5 (not wanting it at all to wanting it a lot). Each beer item had a corresponding item representing a soda pop logo. Items included balls, toy trucks, motorized "dancing" cans, shirts, piggy banks, towels, hats, and salt- and pepper-shakers, representing a variety of brands. An improvement to the previous use of these measures was the increase in number of items and the use of several balanced orders to improve validity. A total of 18 items were randomly assigned to classrooms, with three of each theme (soda pop or alcoholic beverage) represented in each order, to avoid item-specific or order-specific effects. Items in each order crossed gender stereotypes; for example, salt- and pepper-shakers countered athletic equipment.

**ANALYSIS**--Grade differences were assessed via one-way ANOVA with Scheffe tests to examine scores across grade levels for those variables measured among all three grade levels. For predrinking behavior and risky behavior, each of which were measured across two grade levels only, one-way *t*-tests were used. Predicted associations among independent and dependent variables were tested via Pearson's correlations followed by hierarchical multiple regression analysis to control for demographics and other possible predictors. Demographic controls were entered via the stepwise procedure in the first block of the analysis, with all independent variables entered in a second block using the forced-entry procedure. It should be noted that because demographic information was collected from parents via a separate telephone survey, the

N's for the regression analyses are greatly reduced due to noncontacts such as no answers or language difficulties.

## Results

### Age trends

Table 2 shows that as grade increased, so did desirability of portrayals ($p<.000$), identification ($p<.01$), expectancies ($p< .000$), risky behavior ($p< .000$) and predrinking behavior ($p< .05$). Thus, hypothesis 1 was supported, in that children's beliefs regarding alcohol were more favorable as grade level increased. Hypothesis 2, which predicted that children would exhibit more behavior representative of alcohol use as grade level increases, as measured by their toy preference and self-reported frequency of risky behavior, also received support.

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Table 2 About Here

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### Relationship of media perceptions to alcohol beliefs and behavior

Table 3 displays the results of correlation analyses among independent and dependent variables, with Table 4 displaying the results of multiple regression analyses of relationships predicted among desirability, identification, expectancies and the two measures of behavior predicted by the progressive decision-making model (e.g., Austin & Meili, 1994; Austin & Johnson, 1997a, 1997b). Both desirability ($p < .000$) and identification ($p < .05$) positively

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Table 3 About Here

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predicted expectancies with demographics controlled, as predicted by hypothesis 3. Desirability predicted identification ($p < .05$), suggesting that desirability predicts identification while both

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Table 4 About Here

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predict expectancies. Expectancies correlated with predrinking behavior ($p < .05$) as predicted by hypothesis 4 but was not a significant predictor with grade level controlled. Due to multicollinearity between grade level and desirability ($r$=.46, $p$<.000), the sign on the standardized beta for desirability became negative, although the bivariate relationship between desirability and toy choice tended toward significance in a positive direction ($r$=.10, $p$<.10). Expectancies predicted risky behavior with demographics controlled ($p < .000$), as predicted by hypothesis 5. Predrinking behavior related positively to risky behavior ($r$=.20, $p$<.01), as predicted by hypothesis 6. Thus, for the most part a consistent pattern of relationships emerged for predrinking behavior and risky behavior, in support of the MIP model's prediction that desirability of messages and identification with portrayals of alcohol use should positively predict expectancies and, therefore, actual use or preuse of alcohol products.

## Discussion

This study has investigated the validity of a predrinking behavior index as a relevant behavioral outcome when measuring media effects in order to assess precursors to drinking among children for whom alcohol consumption is not yet occurring. It also assessed the relationship of risky behavior to beliefs about alcohol and of alcohol portrayals in advertising as well as grade differences in children's and adolescents' perceptions about media portrayals and alcohol. The results were consistent with patterns predicted by a model of message interpretation processes across all grade levels and suggested a positive relationship between the predrinking behavior index and reports of risky behavior among sixth graders.

The results showed that children's beliefs that mediated alcohol portrayals are desirable increased steadily from third to ninth grade, whereas their desire to be like those portrayed leveled off after sixth grade. Meanwhile, desirability emerged as a significant predictor of both identification and expectancies. That identification and beliefs predicting identification became more positive between the third and sixth grades suggests that attempts to counter the appeal of alcohol advertising need to occur well before sixth grade. If identification has leveled off by sixth grade, which cannot be firmly established by this small, cross-sectional study, this would suggest that for those likely to drink alcohol, little may remain to motivate them after sixth grade other than opportunity. This would suggest that prevention campaigns targeted to middle-school and junior-high-school aged children take place far later than ideal. This would be consistent with decision-making theory and developmental theories, which indicate that middle childhood is a time of major decision making (Elias et al., 1991; Miller et al., 1990).

Expectancies and risky behavior jumped between sixth and ninth grade, providing cross-sectional support for the view that perceptions established by sixth grade have the potential to feed into later substance use. Indeed, consistent with this interpretation of the results, identification and desirability predicted expectancies, which in turn predicted drinking behavior and correlated with predrinking behavior. Identification and desirability did not have direct effects on the behavioral outcomes, providing further support for the Austin et al. theoretical model that suggests decision making progresses through a number of steps over time to produce a cumulative effect on behavior.

The study also provided some, although not unequivocal, support for the predrinking behavior measure as a valid measure of behavior likely to evolve into drinking of alcoholic beverages. The predrinking and risky behavior indices correlated moderately. This suggests that products which appear designed to appeal to children, such as toy trucks, basketballs, beach balls, piggy banks, and toy cans that dance when a switch is flipped, do have the potential to prime them for future drinking. It is important to note that the relationship between expectancies and *predrinking* behavior was weaker than for *risky* behavior, suggesting that the desire for alcohol-themed products, not surprisingly, is a less perfect measure of drinking affinity than actual drinking behavior. In addition, the moderate correlation between the two behavioral measures among sixth graders suggests that the desire for alcohol-themed products will not necessarily lead to drinking behavior. It should be noted that social response bias could have affected the findings, but would be more likely to weaken relationships between perceptions and behaviors than to strengthen them if children try to give answers that they think will please an adult.

It should be noted that this moderate correlation represented only an association between the two measures for sixth graders. No risky behavior data was gathered from third graders, and no predrinking behavior data existed for ninth graders. Thus, the only age at which both data existed was sixth grade. Thus, it remains to be determined whether the relationship between the predrinking behavior measure and actual risk taking strengthens, weakens or remains the same as children grow into teenagers. That the associations between expectancies and the behavior measures were consistent for the two behavior measures across all age groups does provide additional confirmation that the measures are related.

The limitations of the data, including a nongeneralizable sample, and the moderate correlation between predrinking and risky behavior should not diminish the worrisome implications of the significant relationships that did emerge. The findings suggested that 1) desirable images in alcohol advertising positively relate to the desire to emulate the images, even among third graders; 2) the desire to be like the images levels off at sixth grade, but the belief that drinking will bring rewards is predicted by this desire and continues to increase along with the apparent desirability of the portrayals themselves; 3) the belief that drinking brings rewards correlates with the desire for alcohol-themed products and, among older children, predicts large amounts of variance in the frequency of risky substance use; and 4) the desire for alcohol-themed products positively relates to actual use of risky substances such as alcohol and tobacco.

In short, this study adds to the increasing body of evidence that indicates that alcoholic beverages, intentionally or unintentionally, are quite effectively marketed to children. On its own, this study suffers from many weaknesses common to modestly funded studies, such as a small, nonrandom sample and a cross-sectional design. In addition, the opportunity to collect behavioral data from all age groups was limited. The findings, however, are consistent with existing theories and extend those theories with additional empirical evidence. For example, this study used a convenience sample of children less at risk than many others viewing alcohol advertisements, which limits the study's generalizability but which should have made predicted relationships less likely to emerge (Grant & Moore, 1995; Sillars, 1995; Young, 1993). That even these data demonstrated a likely predictive link among beliefs about alcohol portrayals, product appeal, and later consumption should cause concern.

**Table 1**

**Descriptive statistics**

| Variables | Mean | s.d. | Range | Valid *N* | Alpha |
|---|---|---|---|---|---|
| Desirability | 11.15 | 3.55 | 4-20 | 268 | .65 |
| People in ads are popular | 2.63 | 1.29 | 1-5 | 273 | |
| People in ads are smart | 1.99 | 1.06 | 1-5 | 270 | |
| People in ads are good looking | 3.38 | 1.38 | 1-5 | 271 | |
| Men in ads are strong | 3.11 | 1.32 | 1-5 | 273 | |
| Identification | 7.17 | 2.96 | 3-15 | 270 | .70 |
| I wish I could live like ads | 2.11 | 1.24 | 1-5 | 271 | |
| I want to be like TV people | 2.71 | 1.24 | 1-5 | 272 | |
| I wish I could be like ads | 2.35 | 1.25 | 1-5 | 272 | |
| Expectancies | 9.06 | 3.70 | 6-30 | 269 | .77 |
| Drinking makes you happy | 1.55 | .93 | 1-5 | 273 | |
| Drinking helps you fit in | 1.70 | 1.04 | 1-5 | 272 | |
| Drinking helps make friends | 1.60 | .91 | 1-5 | 273 | |
| Drinking helps you have fun | 1.54 | .95 | 1-5 | 273 | |
| Drinking makes sports fun | 1.29 | .71 | 1-5 | 272 | |
| Drinking makes you seem grownup | 1.38 | .88 | 1-5 | 271 | |
| Predrinking Behavior (toy choices) | -2.85 | 4.65 | -19-17 | 249 | |
| Risky Behavior | 4.01 | 1.93 | 3-18 | 178 | .63 |
| How often do you use cigarettes | 1.29 | .90 | 1-6 | 178 | |
| How often do you use tobacco | 1.14 | .65 | 1-6 | 179 | |
| How often do you drink alcohol | 1.58 | .96 | 1-6 | 178 | |

Note: A positive value on toy choice represents a choice of a beer-logo item, whereas a negative value indicates a choice of soda pop-logo item. On other variables, a higher value presents a more positive response.

**Table 2**

**ANOVAs and *t*-tests assessing grade-level differences**

| Variables:<br>Dependent<br>Independent | *df* | *F/t* | *p* | *Means* | *s.d.* | *n* |
|---|---|---|---|---|---|---|
| Desirability | 2,265 | 36.02 | .000 | 11.15 | 3.55 | 268 |
| third | | | | 9.02 | 3.23 | 87 |
| sixth | | | | 11.71 | 3.21 | 143 |
| ninth | | | | 13.87 | 2.79 | 38 |
| Identification | 2,267 | 4.62 | .01 | 7.17 | 2.96 | 270 |
| third$^{a}$ | | | | 6.38 | 2.71 | 86 |
| sixth$^{b}$ | | | | 7.56 | 2.98 | 146 |
| ninth$^{ab}$ | | | | 7.44 | 3.11 | 39 |
| Expectancies | 2,266 | 18.37 | .000 | 9.06 | 3.70 | 269 |
| third$^{a}$ | | | | 8.03 | 2.93 | 86 |
| sixth$^{a}$ | | | | 8.87 | 3.37 | 144 |
| ninth | | | | 12.05 | 4.77 | 39 |
| Predrinking Beh. | 231 | -1.66 | .05 | -3.54 | 4.94 | 233 |
| third | | | | -4.23 | 5.35 | 87 |
| sixth | | | | -3.12 | 4.65 | 146 |
| Risky Behavior | 176 | 5.86 | .000 | 4.01 | 1.93 | 178 |
| sixth | | | | 3.59 | 1.32 | 138 |
| ninth | | | | 5.45 | 2.84 | 40 |

*High means indicate higher levels of desirability, identification, expectancies, and more engagement in risky behavior. A positive mean for predrinking behavior indicates alcohol-item preferences outweigh soda pop preferences, whereas a negative mean indicates more soda pop-related preferences. Grade levels sharing the same superscript letter do not have significantly different mean scores according to a Scheffe test.

**Table 3**

Correlations among variables of interest

| | Expectancies | Risky Behavior | Desirability | Prebehavior |
|---|---|---|---|---|
| Identification | .28*** | .16* | .24*** | .09 |
| Expectancies | | .56*** | .42*** | .14* |
| Behavior | | | .29*** | .20** |
| Desirability | | | | .10 |

*$p<.05$; **$p<.01$; *** $p<.001$

**Table 4**

**Results of hierarchical multiple regressions predicting decision-making variables and behavior***

| **Variables:** Dependent Independent | *r2 chg.* | *df* | *F* | *b* | *P* |
|---|---|---|---|---|---|
| Identification | | | | | |
| Grade | .03 | 1,188 | 6.07* | .18* | |
| Education | .02 | 2,187 | 5.19** | -.15* | |
| Desirability | .03 | 3,186 | 5.35** | .19* | |
| Expectancies | | | | | |
| Grade | .15 | 1,185 | 32.14*** | .39*** | |
| Native American | .03 | 2,184 | 19.83*** | .17* | |
| Education | .02 | 3,183 | 14.74*** | -.13* | |
| Desirability | .08 | 5,181 | 14.36*** | .29*** | |
| Identification | | | | .14* | |
| Predrinking Behavior | | | | | |
| Grade | .06 | 1,185 | 11.46*** | .25** | |
| Expectancies | .06 | 4,182 | 3.06* | .06 | |
| Desirability | | | | -.07 | |
| Identification | | | | .01 | |
| Risky Behavior | | | | | |
| Grade | .17 | 1,114 | 22.60*** | .41*** | |
| Native American | .05 | 2,113 | 16.70*** | .25** | |
| Education | .03 | 3,112 | 12.92*** | -.17* | |
| Expectancies | .11 | 6,109 | 11.07*** | .40*** | |
| Desirability | | | | .00 | |
| Identification | | | | .00 | |

*Variables entered using forward-stepwise regression with models reflecting the cumulative order of progression predicted by the MIP model. The model predicts that desirability should predict identification, which should predict expectancies, which should predict behavior.

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# Thoughtful Self-Critique or Journalistic Cannibalism? International Press Coverage of Princess Diana's Death

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# ABSTRACT

This study focused on the unexplored field of media self-critique and used the news coverage of Britain's Princess Diana's death to analyze differences between elite papers and tabloids as well as differences between German and US papers. Results show that elite papers' coverage was more likely to focus on the media's role and more likely to critique the media than the tabloids' coverage. No significant differences were found between German and US papers regarding the amount of media critique they provided in their coverage.

# Thoughtful Self-Critique or Journalistic Cannibalism? International Press Coverage of Princess Diana's Death

## Introduction

Caught in their ambiguous role between objective reporter and subjective opinion maker, journalists frequently get criticized for the way they cover certain issues or individuals, their handling of sensitive stories, or their privacy-invading reporting practices. This critique can be based on a variety of ethical or ideological viewpoints and considerations and showcases the variety of moral and political values and principles in a modern society (Patterson & Wilkins, 1998). As a result of the public nature of journalism, faulty ethical decisions can cause widespread negative reactions that have the potential to undermine the credibility not only of a single journalist or individual media organization, but also the reputation of the whole journalistic profession. From a professional perspective, it then becomes interesting to study how willing journalists are to criticize their own performance as well as the performance of their media colleagues.

The self-criticism of modern mass media is an interesting yet still vastly unexplored research area. Scholars who study media ethics usually focus their inquiries on *what* was done and *how* it was done, but omit self-reflections on part of the journalists that concern the *why* of unethical behavior. Relying on survey data to study journalists' attitudes and behavior regarding media ethics (Weaver & Wilhoit, 1991; Lichter, Rothman, & Lichter, 1986), researchers often use hypothetical situations and scenarios to stimulate journalists' responses. These rather "constructed" measures can be enhanced and made more valid by analyzing actual media content in which journalists comment on their own or their colleagues' behavior. However, actual media content has rarely been used to study journalists' ethical self-assessment because the occasional reports and essays on the state of journalism don't provide enough data for a thorough and valid analysis.

This study analyzed American and German newspapers' coverage of Britain's Princess Diana's death. The goal was to examine the way the mass media themselves deal with the issue of media ethics and media critique when directly confronted with it.

## Background

The tragic death of Great Britain's Diana Spencer, Princess of Wales, on August 31, 1997, opened up a unique window of opportunity to study and explore a situation of international media self-evaluation and critique. The events surrounding the Princess' fatal car accident and the mysterious role the paparazzi photographers[1] played initially led to a global outcry against the sensationalist press as well as the media in general. Critics complained about the aggressive intrusiveness of the media and in many cases demanded tougher laws to protect privacy rights. Due to the immense public pressure on the media, journalists were forced to raise their voices and comment on the media's role, be it to defend the ethics of their profession or to acknowledge a lack thereof.

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[1] The term paparazzi originates from the Italian movie "La Dolce Vita" (1961) which featured an exploitative journalist named Paparazzo. Most paparazzi are free-lance photographers paid by the picture although some work more directly with photo agencies (Ciolli, 1997; Randolph, 1997). Thus, they usually lack ethical training and are not bound by the ethical guidelines of formal news organizations (CNN Reliable Sources, 1997b).

In some cases, this emotional situation created a moment of thoughtfulness and reflection which inspired journalists around the world to describe, analyze, and criticize their own profession's behavior, especially toward celebrities and public figures. Other journalists, however, engaged in a confusing public discussion. In an act of journalistic cannibalism, they tried to blame each other for being responsible for Diana's death, producing rushed and overly opinionated statements rather than thoughtful self-critique. Self-defense was the motto of the day and many comments seemed to originate out of fear for one's own reputation.

Representatives of US tabloids, for example, in interviews and public statements rejected the accusations of being partly responsible for Diana's death by paying large amounts of money for paparazzi photos. They insisted to be separated from the paparazzi and treated differently. Especially the National Enquirer was very active in trying to convince people that it had stopped using a so-called "new breed" of aggressive paparazzi who should be blamed for Diana's death (CNN Reliable Sources, 1997a; Meet the Press, 1997). In addition, many tabloids made it widely known that they were turning down offers to buy pictures of the car accident (Ciolli, 1997). Another strategy used by the US tabloids was to point out differences between them and their allegedly more aggressive European counterparts.

German tabloids, similar to the US tabloids, refused to identify themselves with the paparazzi. However, the tabloid BILD was globally criticized for running a photo of Diana's accident although the picture was blurred and didn't show bodies in the car (McAllester, 1997).

In contrast, the British tabloids publicly apologized for their behavior and promised a future restraint toward the royal family. As a main component of this behavioral change, the tabloids announced that they would from now on respect the privacy of Diana's sons, Prince William and Prince Harry. Beyond this reaction, even some of Britain's respected quality papers announced plans to revise their publishing practices (British newspapers, 1997).

Aside from the tabloids, the elite media were criticized as well. Although the critique usually didn't focus on the elite media directly, they were often included in an overall critique of the whole media system. Some commentators argued that the differences between the mainstream and tabloid media have blurred due to a celebrity-driven culture. Therefore, the blame for Diana's death should at least partly be put on the media in general (A world without Diana, 1997). In response, the elite papers tried to distance themselves from the paparazzi and the tabloids by highlighting the higher quality of their own reporting style and their use of less sensational and intrusive photos (CNN Reliable Sources, 1997b).

However, in a strange coalition, tabloid and elite media were both fast to point out that Diana often used them to her advantage and was quite successful at forming her own image as well as bringing certain social issues she considered important into the media spotlight (Lull, 1997). These notions became stronger after it was officially confirmed that the driver of Diana's car had been intoxicated. What happened then was a shift in the coverage away from the media's treatment of celebrities and the paparazzi's behavior towards Diana's driver and other non-media issues (McAllester, 1997; Bennett, 1997). It seemed that the media were relieved to leave the spotlight and have a helpless villain to point at.

## Theory

The main functions of the modern mass media have been described as surveillance through news and information, interpretation of events, linkage of individuals and groups, socialization, and entertainment (Dominick, 1996). Through these functions the mass media help their audiences cope with a fast-paced and rapidly changing society. In contrast, hegemony theory claims that media institutions serve primarily as stabilizers of the existing order, thus preserving the status quo and supporting dominant societal elites (Shoemaker & Reese, 1996).

Left-wing authors like Gitlin (1980) highlight the power of the mass media as distribution systems for ideology and ever-present image-makers to promote or blank out political movements and absorb social opposition into dominant societal structures. Hegemony is defined as "uniting persuasion from above with consent from below" (Gitlin, 1980, 10), whereby those who rule secure their power by impressing their situational definitions upon the less powerful mostly through journalists' routines and framing.

Besides being a mere distribution channel for the ruling class, the media themselves often are part of a dominating and powerful ideology due to their institutional affiliations, such as memberships in business association, social activities, and corporate directorships (Shoemaker & Reese, 1996). Thus, media critique can, at least indirectly, hurt powerful societal groups whose interests are often intertwined with the media's interests.

Applied to the situation following Princess Diana's death, the question emerged as to what degree the media were willing to criticize themselves and the system they are a part of. Facing harsh critique, the mass media were forced into a defensive position which left them with three main behavioral alternatives. One the one hand, the media had the choice to defend the existing system by downplaying or neglecting the role the media played in Princess Diana's death. They could justify the behavior of their colleagues involved in the deadly car accident in order to maintain the media's powerful position in the societal system. On the other hand, the media could have used the unique circumstances of Diana's death for an in-depth analysis of their own practices and professional ethics which could have eventually led to changes in the media system. A third possible reaction for the mass media would have been an initial apology to calm down the public, hoping that the media critique would quickly diminished as time goes on and other news items take over.

The worldwide media coverage of Princess Diana's death allows for a comparison of news coverage in various countries. The assumption that news coverage of an individual event varies and changes across national boundaries can be based on the existence of various professional journalistic role models (Shoemaker & Reese, 1996). International research results suggest that there are differences in self-perceived professional roles between American and German journalists. Johnstone, Slawski, and Bowman (1972) reported that American journalists see themselves either as neutral transmitters of information or as participants who actively develop stories. Weaver and Wilhoit (1991) extended these two categories and described three overlapping journalistic role conceptions: The interpretive function, dissemination function, and adversary function. All three roles are based on the overriding notion of objectivity and balance.

The majority of German journalists prefers a more active role. They want to be educating missionaries rather than merely neutral transmitters of information. In addition, they are less willing to use ethically questionable methods of investigation when doing research for their stories (Koecher, 1986).

Generally, the way in which journalists see themselves and their job determines how they obtain, analyze, and present information. Therefore, based on the existing differences among the self-perceived role conceptions of German and US journalists, it can be assumed that there are also differences in the amount of media-critical news coverage of Princess Diana's death.

> **H 1:** In their coverage of Princess Diana's death, the elite newspapers focus more on the role of the media than the tabloids.

The focus of the media's coverage of Princess Diana's death can be defined as the various topics or aspects related to Princess Diana that the media paid attention to. These topics can be roughly divided into non-media aspects, such as the car accident, legal proceedings, the funeral, the story of Diana's life, her marriage, or the royal family and media-related aspects which include reports on the media's behavior in general or surrounding the fatal car accident as well as the media's past coverage of and role in Diana's private and official life. These media-related aspects were often extended to encompass the broader issue of invasion of privacy, especially looking at the paparazzi and their main customers, the tabloid media.

Elite papers and tabloids are distinct types of newspapers that differ in many aspects. Elite papers can be defined as newspapers that provide in-depth coverage of political, economical, and scientific issues and have a comparatively high reputation. Tabloids, on the other hand, provide a flashy coverage of primarily entertainment news without much depth and have a relatively low reputation. Thus, it seems likely that the tabloids concentrate on the non-media aspects of Diana's death whereas the elite newspapers are more inclined to report on the role of the media as part of their overall coverage.

In addition, the tabloids were handicapped because they were the main customers of the paparazzi and frequent users of paparazzi photos. Given the public anger at the paparazzi directly after Diana's car accident, a negative image spillover onto the tabloids seemed to be likely. The elite media, however, considering themselves somewhat removed from the tabloids and paparazzi, didn't have as much to lose as the tabloids by making the media a topic of their coverage.

**H 2:** In their coverage of Princess Diana's death, German newspapers criticize the media's role more than US newspapers.

Critique of the media's role can be defined as remarks and statements which comment negatively on behavior the media displayed. This definition includes coverage that points out the media's failure to behave according to ethical standards such as truth, honesty, accuracy, objectivity, thoroughness, fairness, respect for the people covered, and public accountability.

German papers are expected to criticize the media's role more often than US papers because German journalists are more concerned about ethically questionable behavior similar to that shown by the paparazzi involved in Diana's death and its implications for the whole media system than US journalists. Also, as self-declared critics and educators German journalists are more likely to highlight the failures of journalists and educate their readers about problems related to media ethics than their American counterparts whose self-understanding is more clearly based on the concept of objective reporting.

## Method

The research method used in this study was content analysis. Content analysis as a scientific research method requires the systematic study of archived records and can be defined as a technique for making inferences by systematically and objectively identifying specific characteristics of media content.

The sample consisted of 11 newspapers from Germany and the US. A purposive nonprobability sample was used despite its lower reliability because of its convenience, low cost, and timeliness. Nonprobability samples are "useful in scanning and detecting potential problems" and "useful precursors to more rigorous sampling and research" (Broom & Dozier, 1990, 120). However, they are not representative of a larger population.

The following elite and tabloid papers were selected because they are conventionally known as national newspapers and are available to all areas of their respective countries of origin.

**Germany:**

*Elite papers:* Frankfurter Allgemeine Zeitung, Frankfurter Rundschau, Sueddeutsche Zeitung (all daily).
*Tabloids:* BILD (daily), Stern (weekly).

**US:**

*Elite papers:* New York Times, Washington Post, Chicago-Tribune (all daily).
*Tabloids:* The National Inquirer, The Star, The Globe (all weekly).

The study's time frame differed for daily and weekly publications. Of the six elite papers, every issue during the two weeks immediately following Princess Diana's death on August 31, 1997, was analyzed. Of two US tabloids, the three issues following Diana's death were analyzed whereas for the third US weekly tabloid only one issue was analyzed. Of the German weekly tabloid, two issues directly after Princess Diana's death were analyzed, and of the German daily tabloid, every issue during the two weeks following Diana's death was analyzed.

Unit of analysis was a newspaper issue. Within each newspaper issue, all articles related to Diana's death were analyzed, including such topics as the car accident, the royal family, Diana's biography, her relationship with the media, the funeral, legal proceedings in Paris, etc.

The unit of observation were paragraphs within the articles covering Princess Diana's death. Based on the total number of paragraphs covering Diana's death, the value of each variable was calculated as a percentage of the overall coverage. This use of percentages made it possible to compare the coverage of weekly and daily newspapers.

*Coverage focusing on the media* was defined as the percentage of paragraphs within the total Diana coverage of a given day dealing with the media. A paragraph was considered to be media-related when its main content were descriptions of the media's behavior in general or surrounding Diana's death as well as broader media-related issues such as the right to privacy.

*Media critique* was defined as the percentage of media-related paragraphs of a given day criticizing the media. Indicators for media critique were accusations of the media's wrongdoing and unethical behavior as well as key words and phrases such as "the media hunted Diana" or "the media made Diana's life hell."

In addition, the paragraphs criticizing the media were analyzed as to whom the critique was aimed at. Three separate variables were used: *Paparazzi critique* was defined as the percentage of critical media-related paragraphs of a given day that was aimed at the paparazzi. *Tabloid critique* was defined as the percentage of critical media-related paragraphs of a given day that was aimed at the tabloids. *All media critique* was coded as the percentage of critical media-related paragraphs of a given day that was aimed at the media in general.

Two coders analyzed a subsample of newspaper issues to test for intercoder reliability. Holsti's coefficient of reliability was sufficiently high to warrant proceeding with the study.

To test the two hypotheses independent t-tests were run for the variables involved. A post-hoc analysis used a bivariate crosstabulation to test the relationship between the amount of media critique and the kind of newspaper.

## Results

This study analyzed the coverage of 93 newspaper issues published during the four weeks immediately following Princess Diana's death. Of these newspaper issues, 72 (77.42%) stemmed from elite papers and 21 (22.58%) from tabloids. Regarding their country of origin, 45 (48.39%) of the newspaper issues were published in Germany whereas 48 (51.61%) were published in the US. The total amount of coverage of the 93 newspaper issues devoted to the events surrounding Princess Diana's death consisted of 10,194 paragraphs.

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Table 1 about here

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Within the overall coverage of Princess Diana's death, the average percentage of coverage devoted to the role of the media was 21% (Table 2). This percentage appears to be surprisingly high given the fact that there were many other aspects to be covered. However, the paparazzi's involvement and the public's initial outcry against the media's behavior seemed to determine much of the coverage and made the newspapers fill more than one fifth of their Diana newshole with media-related stories. When further analyzing this media-related coverage in regard to media critique it was found that an average of 25% of the media-related paragraphs criticized the media's behavior. Thus, in relation to the total coverage of Diana's death, the percentage of paragraphs critical of the media was about 5%. Given the overwhelmingly negative public reactions toward the media, this number seems to be relatively low. It also suggests that the media defended themselves on their own turf and were not overly busy trying to point out ethical failures or other critical aspects of their own and their colleagues behavior.

The media critique was aimed at three main actors: the paparazzi, the tabloids, and the media in general. Table 2 shows that among the media-critical coverage the average percentage of content criticizing the paparazzi was 38%, while 17% of the critique was aimed at the media in general and 7%

at the tabloids. These results show that the paparazzi faced substantially more critique than the other media players.

Table 2 about here

Based on differing reporting styles, it was hypothesized that elite newspapers focus more on the role of the media related to Diana's death than tabloids. Table 3 provides strong evidence to support this hypothesis. On average, elite newspapers devoted 25% of their coverage to the role the media played, compared with only 5% the tabloids devoted to the media's role ($t = 7.04$, $df = 87.82$, $p < .001$). These significant findings indicate that, between the tabloids and the elite papers, there were different degrees of willingness to make the media's (i.e. one's own) behavior an issue. As expected from their general reporting style, the tabloids covered mostly non-media issues while the elite press was much more inclined to investigate and comment on the role the media played in Diana's death.

Table 3 about here

Based on empirical findings that suggest the existence of nationally differing professional journalistic role models, it was hypothesized that German papers criticize the media's role more than US papers. The results in table 2 show that, on average, German papers criticized the media in 23% of their media-related coverage, while US papers criticized the media in 26% of their media-related coverage. An independent t-test showed no significant difference between German and American newspapers regarding the average amount of media critique provided in their respective coverage of Princess Diana's death (t = .52, df = 91, n.s.). Thus, hypothesis 2 was not supported.

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Table 4 about here

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A post-hoc analysis of the recoded variable "media critique" provided evidence that the elite papers were more likely to criticize the role of the media than the tabloids (Table 5). Roughly a third of the elite papers' media-related coverage was not critical of the media, compared to 62% of the tabloids' media-related coverage. This finding shows that the tabloids tried to avoid criticizing the media. On the other hand, 36% of the elite newspapers' media-related coverage contained substantial media critique, compared to only 19% of the tabloids' media-related coverage. A crosstabulation of the amount of media critique by kind of newspaper yielded a significant relationship between these two variables ($X^2$ = 6.82, df = 2, p < .05). One reason for this result might be that the elite media were more willing to voice media-criticism because they aimed most of their critique at the tabloids and the paparazzi, while at the same time differentiating themselves from these groups. The tabloids, however, might have tried to avoid criticizing the media because they feared that, no matter who they would have blamed, the audience would have thrown them in one pot together with the criticized media. Thus, the tabloids probably preferred not to criticize the media at all to make sure that they didn't hurt themselves.

Table 5 about here

## Discussion

This study focused on the unexplored field of media self-critique and used the news coverage of Britain's Princess Diana's death to analyze differences between elite papers and tabloids as well as differences between German and US papers. The results provide evidence that elite newspapers, in their coverage of Diana's death, focused more on the role of the media than tabloids. The elite media were also more likely to criticize the media than the tabloids. No significant differences were found between the German and US papers' amount of media critique.

Generally, the amount of media critique among the total coverage of the events surrounding Princess Diana's death was minuscule, suggesting that the media were not very comfortable with this kind of coverage. The finding that elite papers were more likely to be critical of the media's behavior than tabloids seemed to be associated with the fact that the elite media often tried to differentiate themselves from the tabloids and paparazzi. Therefore, they felt more comfortable criticizing their "opponents."

Elite papers and tabloids both put most of the blame on the paparazzi which reflects their efforts to move someone else into the center of attention. The paparazzi critique also indicates that both kinds of papers took advantage of a group which didn't have many chances to defend itself because it fulfilled only a support function and didn't have its own outlets. Given the fact that the paparazzi undeniably are a part of the overall media system, it seems appropriate to label the elite papers' and tabloids' behavior *journalistic cannibalism.* The question remains open as to how successful the elite papers and tabloids were in blaming the paparazzi, and the answer depends largely on the degree to which the public was willing to separate the roles of different media sub-systems or identified the paparazzi with other media and the media system in general.

It should be noted that most of the tabloids included in this study were weekly publications and probably had a smaller newshole than the daily elite papers. Therefore, it is possible that the elite media had the chance to fill more space and report more intensively on the media's role related to Diana's death. However, the fact that the analysis was based on the relative amount of coverage (percentage of total coverage) should have diminished the potential impact of this limitation.

The finding that there were no differences between the German and US papers' amount of media critique suggests that the use of professional journalistic role models as a theoretical basis might have not been adequate in this study. The dichotomy of media critique (negative comments on the media's role) vs. non-media critique (neutral or positive comments on the media's role) as conceptualized in this study doesn't seem to correspond with the role-model based differentiation between active analysis (Germany) and objective reporting (US). In fact, it appears that both reporting styles can be equally critical.

The increasing coverage of media scandals and unethical journalistic practices shows the media's growing interest in and sensitivity toward their own behavior. No matter if self-induced or based on external pressure, reporting about oneself and analyzing the own profession and its standards has become more fashionable in recent years. Therefore, media self-critique appears to be a fruitful area for further research. Future studies should analyze the amount, sources, aims, and tone of the media's self-critique more detailed. Therefore, qualitative analysis may be more suited to explore the topic and develop analytical categories that can then be used in larger quantitative studies. In regard to sampling, it might be useful to select daily tabloids published in the same cities as the selected elite papers. For example, the New York Daily News or New York Post vs. the New York Times and the Chicago Sun-Times vs. the Chicago Tribune.

Finally, future research could examine the potential of media self-critique to influence the status and perceptions of the journalistic profession. Self-critique might be an indicator of the media's awareness of ethical issues and might have the power to initiate positive changes in the field of journalism.

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**Table 1.** **Percentages for kind of newspaper and newspapers' country of origin variables.**

| Variables | % |
|---|---|
| Kind of newspaper | |
| Elite | 77.42 |
| Tabloid | 22.58 |
| | 100.00% |
| | (N = 93) |
| Newspaper's country of origin | |
| Germany | 48.39 |
| US | 51.61 |
| | 100.00% |
| | (N = 93) |

**Table 2. Means and standard deviations for focus on the media's role, media critique, paparazzi critique, tabloid critique, and all media critique variables.**

| Variables | Mean | Std. Deviation | N |
|---|---|---|---|
| Focus on the media's role* | 20.45 | 21.89 | 93 |
| Media critique** | 24.91 | 28.16 | 93 |
| Paparazzi critique*** | 37.86 | 40.86 | 93 |
| Tabloid critique**** | 7.32 | 17.13 | 93 |
| All media critique***** | 16.51 | 28.64 | 93 |

* Focus on the media's role was coded as the percentage of paragraphs within the Diana coverage of a given day dealing with the media.

** Media critique was coded as the percentage of media-related paragraphs of a given day criticizing the media.

*** Paparazzi critique was coded as the percentage of critical media-related paragraphs of a given day that was aimed at the paparazzi.

**** Tabloid critique was coded as the percentage of critical media-related paragraphs of a given day that was aimed at the tabloids.

***** All media critique was coded as the percentage of critical media-related paragraphs of a given day that was aimed at the media in general.

**Table 3.** **Independent t-tests for kind of newspaper by focus on the media's role.**

| | Kind of newspaper | | | | |
|---|---|---|---|---|---|
| Variables | Elite Means (& SD) (N = 72) | Tabloid Means (& SD) (N = 21) | t value | df | significance |
| Focus on the media's role* | 25.06<br>(22.78) | 4.67<br>(4.98) | 7.04 | 87.82 | $p < .001$ |

* Focus on the media's role was coded as the percentage of paragraphs within the Diana coverage of a given day dealing with the media.

**Table 4.** **Independent t-test for media critique by newspapers' country of origin.**

| | Country of origin | | | | |
|---|---|---|---|---|---|
| Variable | Germany Means (& SD) (N = 45) | US Means (& SD) (N = 48) | t value | df | significance |
| Media critique* | 23.33<br>(30.51) | 26.40<br>(26.00) | .52 | 91 | n.s. |

* Media critique was coded as the percentage of media-related paragraphs of a given day criticizing the media.

**Table 5. Crosstabulation of media critique by kind of newspaper.**

| Amount of media critique | Kind of newspaper<br>Elite | <br>Tabloid |
|---|---|---|
| No critique | 30.6% | 61.9% |
| Medium critique | 33.3% | 19.0% |
| Heavy critique | 36.1% | 19.0 % |
| | 100.0%<br>(N = 72) | 100%<br>(N = 21) |

$x^2 = 6.82$, df = 2, $p < .05$
Cramer's V = .03

# The Third-Person Perception and Support for Restrictions Of Pornography: Some Methodological Problems

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## ABSTRACT

### The Third-Person Perception and Support for Restrictions of Pornography: Some Methodological Problems

The third-person effect hypothesis, that people perceive media to impact others more than themselves, also posits this perception may lead to greater support for censorship. Teens from 15 high schools in Taipei, Taiwan, were surveyed and the results support the existence of third-person effects.

However, the magnitude of the perceptual bias between perceived first-and third-person effects did not predict support for restriction. Because this finding calls into question the use of magnitude of the perceptual bias as a predictor for support for control of pornography, a fresh typology was developed to reflect the relationship between the perceptual and behavioral components.

# The Third-Person Perception and Support for Restrictions of Pornography: Some Methodological Problems

Social psychologists and communications researchers have repeatedly examined why individuals ascribe greater influence from media to others than they do to themselves. This phenomenon described by Davison (1983) and identified as the third-person effect, not only predicts that people will overestimate the influence that communications have on the attitudes and behavior of others but that they are willing to take action to "protect" those other from the resultant effects of the communication. Gunther (1995) in a nationwide sample explored the relationship between these two parts of the third-person effect—the "perceptual component" and the "behavioral component." Salwen (1997) also uses these labels.

During the twenty-five years that researchers have studied the third-person effect, the existence of the perceptual component—that messages are perceived to have a weak effect on self, but a more powerful and persuasive effect on others—has been almost universally supported in both surveys and experiments (Tiedge et al., 1991; Perloff, 1993). Identifying characteristics of messages and audiences that link this perceptual component with the behavioral component has been more difficult. In other words, what kind of messages or what kind of message receivers are associated with efforts to suppress the message?

One general characteristic of the message that has been linked to willingness to censor or control is a message deemed anti-social or in some way harmful or dysfunctional to society. Various research studies have identified the following message characteristics as related to the behavioral component of the third-person effects hypothesis: perceived threat to the democratic system from a negative political message (Rucinski & Salmon, 1990), "unfair" election news (Salwen, 1997), pornography (Gunther, 1995; Rojas et al., 1996), violence on television (Rojas et al., 1996), sexually explicit cable programming (Lee & Yang, 1996), violent and misogynic rap lyrics (McLeod et al., 1997).

Pinpointing how the interaction between the perception of effect on self and the perception of effect on others relates to the behavioral component has been more elusive. We suggest that part of the difficulty is methodological. Many researchers have sought to quantify the difference in perceived effects on self and perceived effects on others when looking for the reason for a stronger behavioral component. The magnitude of this difference is referred to by some as perceptual bias (Gunther, 1995), size of third-person perception (McLeod et al., 1997; Salwen & Driscoll, 1997) or perceptual discrepancy (Gunther, 1991; Tiedge et al., 1991) and by others as perceptual gap, (Lasorsa, 1989; Rojas et al., 1996). Then it is hypothesized that the greater the magnitude of this gap the greater is the likelihood of an attempt to control the message.

Because in repeated studies the effect on others is perceived to be larger, the usual procedure is to subtract the perceived self-effect score from the perceived other-effect score for each subject. However, the difficulty with this procedure is that a self and other view that lie close together in affects me/affects them are treated as equivalent to those that lie close together in a doesn't affect me/doesn't affect them. Although it might seem that those who say a message doesn't affect me, but does affect them would be the most likely to suppress the message for the good of society, that is not the case. In fact, although Thompson et al. (1990) found evidence of the third person effect, they also unexpectedly found that those who perceived pornography to have the greatest effects were opposed to its regulation

The purpose of this study is to suggest a different way of looking at the relationship between the perceptual and behavioral components and to develop a typology to model the relationship between the perceived effect on self and perceived effect on others as they relate to attitudes about censorship. A review of the literature on third-person effect and support for restrictions of pornography will follow a brief description of the regulation of pornography in Taiwan, where this study was conducted.

## The Regulation of Pornography in Taiwan

When studying attitudes toward the sexual content of media in Taiwan one must consider attitudes in the Chinese cultural context that extend back centuries as well as the influences of western, including Japanese, print and video that are relatively recent arrivals. Western definitions of obscenity and pornography differ from those used in present-day Taiwan. Therefore, comparisons must be viewed with caution.

Chinese traditional literature has large segments devoted to erotic themes (He, 1996) and there are even centuries-old drawings of sexual acts (Brewer,1982). But Confucian concepts of proper family life, filial piety and correct behavior of young persons tended to sequester and accept this material as art, historical artifact and literature and thus not judge it by the same standards as contemporary materials.

Another reality is that technology, the new press freedom that followed the lifting of martial law in 1987, and international entertainment distribution systems have rendered the laws obsolete. For example, the regulations in the Publication Law enacted in 1973 label as obscene photographs that show genitals or female breasts. Sexually oriented R-rated material is banned from broadcast television, but that policy was instituted before the advent of cable.

The Taiwan High Court ruled in 1997 that the Chinese edition of Penthouse magazine was not legally obscene. Since that ruling, Chinese editions of Penthouse and Playboy are sold at Taiwan bookstores or by street vendors. It seems that what can and cannot be censored on obscenity grounds remains far from clear.

News vendors might display a U.S. edition of Playboy showing full frontal nudity of women alongside an edition from Japan with pubic hair exposure airbrushed out, and also displayed would be a third version, in Chinese, showing only upper body nudity. For purposes of this study, all these versions are classified as pornographic material.

Slick pornographic magazines were generally not available until Chinese editions of Playboy and Penthouse appeared in the 1990s, although Japanese adult comic books have long been popular in Taiwan, with no age constraints.

The first video cassette recorder was imported into Taiwan as recently as 1976 (Qiu, 1984) and the number of VCRs has increased dramatically from 3.75 % penetration in 1981 to 71.16 % by 1992 (DGBAS, 1995). Video rental shops proliferated and became the major source of pornographic films. Video tapes of R-rated or X-rated films which show male or female genitals are illegal to the public. However, it is easy to find the tapes available for showings in small rooms of video shops or in entertainment districts. Age does not seem to matter. In a study of the video tape business (Wang et al., 1989), it was found that 93 % of operators of the video shops admitted that they provided pornographic films "under the counter." VCR use declined rapidly after 1993, when the government passed the Cable Television Law to legalize the cable television industry. Pornographic materials are readily available on cable channels and some channels showed such films before cable was regulated.

Under the cable television law, sexually explicit films or programs (lower body nudity shown as mosaic or sprayed) may be shown from midnight to 5 a.m. on general channels and may be presented any time on special channels, accessed through decoding devices.

Mainstream movie theaters may show sexually oriented R-rated films, but persons under age 18 are not admitted. However, it is popular for adolescents to attend sexually oriented R-rated films in out-of-the-way theaters. Furthermore, X-rated movies are available widely, regardless of age, in rural theaters and in video rental shops where supervision is lax.

Government restrictions prohibit Taiwan high school students under 18-years-of-age from watching sexually oriented R-rated films shown after midnight on cable TV, and forbid rental or purchase of pornographic films and publications, but enforcement is difficult, and recent studies (Lo et al., 1997) indicate that a majority of high school students have had access to pornographic materials forbidden by the government.

In Taiwan and for use in this study, "pornography" includes R-rated and X-rated films on cable television, in a theater, on rented VCR films, adult magazines, books, comic books and sexually explicit material on computer or CD-Rom.

It should be noted further that the majority of pornographic materials available to adolescents in Taiwan are produced in the United States, Japan, Europe and

Hong Kong , in that order. Local products in Chinese are limited (Wang et al., 1989).

In Taiwan's exploding media mix, foreign products and images clash with traditional tendencies and behavior. How Taiwan adolescents' attitudes respond to the intrusions of pornography and how these intrusions affect their behavior are important questions.

## Review of the Literature and Hypotheses

### The third-person perception: The perceptual component

Perloff (1993) reported that 13 of 14 studies on the third-person effect between 1983 and 1992 found support for the perceptual component of the hypothesis. During the 1990s, studies also overwhelmingly have supported the third-person perceptual component of the hypothesis. In a survey of 648 adults in the United States, Gunther (1995) reported that a majority of respondents perceived others to be more negatively influenced by X-rated material than themselves. In another survey of 605 U. S. adults, Salwen and Driscoll (1997) found that most respondents perceived press coverage of the O. J. Simpson trial to exert greater influence on other people's opinions than their own. Research conducted in Taiwan (Hu & Wu, 1996) also indicated that qualified voters perceived election news and election polls to have greater influence on other people's voting decisions than their own. Based on these research findings, we predicted the following:

H1: Respondents will perceive pornography to have greater negative influence on others than on themselves.

### Consequences of third-person perception: The behavioral component

Though Davison (1983) described the behavioral impact of the third-person effect in his seminal article and seemed to indicate that support for media control based on perceptions of effect rather than actual effect was a result that was dysfunctional for communication, it was later that researchers focused attention on the behavioral component. It has been more difficult for them to demonstrate its existence.

Rucinski and Salmon (1990) found that although perceived influence of a message did not predict support for external control of media content, perceived harm did spur support for policy change to protect the audience. Specifically, when a negative political message was viewed as threatening or dangerous to the democratic system, regulation or monitoring of campaign advertising—behavioral control to protect others—was likely to be supported. Salwen (1997) also found support for restriction on "unfair" election news when the audience perceived harm to others.

Salwen and Driscoll (1997), who studied audience support of restrictions related to coverage of the O. J. Simpson trial, were also unable to support the behavioral component hypotheses when they looked at the magnitude of perceptual bias using Likert scales to figure the difference between "other" and "self." They conclude that if the magnitude of perceptual bias is a factor in attitude or behavior supporting press restrictions, it interacts with other demographic and psychographic variables.

This behavioral component appears to be most operative when the message is seen as negative or socially dysfunctional, and in the mid 1990s, research focused on the behavioral component as it related to censorship of pornography (Gunther, 1995; Lee & Yang, 1996; Rojas et al., 1996) and other negatively viewed communications (McLeod et al., 1997; Paxton, 1996).

For example, Rojas et al., (1996) found a relationship between magnitude of perceptual bias and pro-censorship attitudes toward media in general, violence on television and pornography. Their study indicated that magnitude of perceptual bias was a significant predictor of pro-censorship attitudes. McLeod et al. (1997) found that magnitude of perceptual bias was significantly related to support for censorship of violent and misogynic rap lyrics.

It was only when Gunther (1995) omitted those respondents who did not perceive that others were more negatively affected than themselves that he found the magnitude of perceptual bias was a predictor of support for restrictions on pornography. When Gunther (1995) included all the respondents, not only those who perceived pornography to have greater influence on others than on themselves, the initial regression accounted for only 1% of the variance.

Most of the studies that examined the behavioral component of the third-person effect used magnitude of perceptual bias as a predictor of support for media restrictions and produced rather inconsistent results. We suggest that the elusive relationship between third-person effects and support for media restrictions was in part caused by the use of magnitude of perceptual bias as a predictor. Although the use of the magnitude of perceptual bias as a predictor of support for media restriction has some empirical support, its basic assumptions are questionable. First, it mistakenly assumes that the desire for censorship is mainly based on biased optimism (Gunther, 1995), or a paternalistic foundation (McLeod et al., 1997).

Gunther (1995) argues that it is biased optimism, the tendency for people to think they are less likely to experience unfortunate events than are others, that leads people to see others as more vulnerable to harmful media content. Owing to this bias, people support restriction of media content to protect others from the harmful effects.

Expanding on Gunther's analysis, McLeod et al. (1997) say that censorship is based on a paternalistic perception of superiority. This perception leads people to believe that the harm from media "can't happen to me." To protect those others from the harmful media effects, people will want to restrict media content.

Thus, Gunther (1995) and McLeod et al. (1997) conclude that it is the perceived effects on others relative to oneself, or the magnitude of perceptual bias, that leads people to support censorship.

In other words, people are motivated to support restrictions on pornography or other media content by a variety of reasons. To protect the relatively helpless others from harmful media effects, as suggested by Gunther (1995) and McLeod et al. (1997), is only one of these reasons. To some the desire may be out of concerns for the well-being of others; to others it is motivated by a fear of anti-social behavior, and still to others, it stems from "concerns of sincerely and deeply felt moral imperatives" (Linsley, 1989, p. 344). For example, some people react to news of a shortage in consumer goods by stocking up to protect themselves, not others (Davison, 1983). By the same token, although those who read about the tragedies of drunken driving may experience the biased optimism of "it can't happen to me," their perception of effect on me and effect on others might or might not be associated with support for control of liquor advertising. This illustrates that the magnitude of perceptual bias may obscure other reasons for supporting controls on media.

The other flaw with the use of the magnitude of perceptual bias as a predictor of support for censorship is that it does not distinguish between those who perceive media content to have high influence on themselves and on others and those who perceive media content to have low influence on themselves and on others.

To demonstrate the problem of using magnitude of perceptual bias as a predictor of support for media restrictions, an alternative typology of third-person effects based on the two dimensions of "perceived effects on self" and "perceived effects on others" is constructed and presented in the four-fold typology of Figure 1. In this figure, Type 1 represents the individuals who perceived pornography to have high effect on themselves and on others. Type 2 represents those who perceive pornography to have high effect on themselves but low effect on others. In Type 3, we find individuals who perceive pornography to have low effect on themselves but high effect on others. In Type 4 are those who estimate pornography to have low effect on themselves and on others.

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Figure 1 about here

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If the magnitude of perceptual bias is a good predictor of support for censorship as suggested by Gunther (1995) and McLeod et al. (1997), one would expect Type 3 individuals to display strongest pro-censorship attitudes or behavior. Type 2 individuals would be least likely to support restrictions of pornography. This reverse third-person effect has been demonstrated. Message receivers are most likely to feel they are influenced more by a message than are others when the message is positive:

public service announcements (Gunther & Thorson (1992). Those who perceive pornography as having some potentially positive effects like sex education or releasing sexual tensions might be in this quadrant of the model.

The magnitude of perceptual bias would lead one to expect Type 1 individuals to display the same censorship attitudes as Type 4 individuals. As we will discuss later that is highly unlikely. For Type 1 the expected high influence on self and others is likely to be additive rather than a magnitude of difference—subtractive amount—and likely a small difference at that. Type 3 is likely to demonstrate the traditional third-person effect. But there seems no reason to expect that Type 2 who exhibits the "reverse third-person effect" is likely to display the same magnitude of perceptual bias as Type 3 only in the opposite direction. Type 4 individuals are likely to oppose censorship because they see little media effect on themselves and others.

In this study, we expected that Type 1 would be more likely to support restrictions on pornography than other types. Type 4 would be less likely to support restrictions on pornography than other types. These predictions are based on Davison's third-person effects hypothesis and other previous studies. Most of the past research suggests that it is the perceived effects on others that motivates people to support media restrictions (Gunther, 1995; McLeod et al., 1997). Salwen (1997) found that perceived effects on others was positively related to support for restrictions on unfair election news coverage. In addition, several previous studies also indicate a positive relationship between perceived effects of media messages on self and support for restriction of media. For example, Lee and Yang (1996) found that perceived effects on self was an important factor in predicting support for pornography restrictions. Gunther (1995) also found perceived effects on self was positively related to supporting restrictions on pornographic materials.

In the light of these considerations, we suggest that it should not be the magnitude of perceptual bias but the perceived effects on self and on others that motivate people to support restrictions of pornography. Thus, it is hypothesized that:

H2: Type 1 respondents (perceived high effects on self and others) will be more likely to support restrictions of pornography than do other type respondents.

H3: Type 4 respondents (perceived low effects on self and others) will be less likely to support restrictions of pornography than do other type respondents.

H4: Magnitude of perceptual bias will not be associated with support for restrictions of pornography.

H5: Both perceived effects of pornography on self and perceived effects on others will be positively associated with support for restrictions of pornography.

## Method

Subjects for this study were drawn from 15 randomly selected high schools in Taipei, Taiwan. Three classes were randomly chosen from each school. The sample, which comprises 45 classes, was designed to provide a wide range of socioeconomic backgrounds. The questionnaires were distributed in classes during a two-week period in December 1996. The total completed sample was 1858, consisting of 964 (51.9%) males and 894 (48.1%) females. Of the respondents, 642 (34.6%) were in Grade 10, 638 (34.5%) in Grade 11 and 574 (30.9%) in Grade 12. Questionnaires were distributed and instructions given by trained senior undergraduate students at the National Chengchi University.

## Measurement of Variables

**Perceived effects on self and others**. To measure perceived effects on self, respondents were asked to rate separately the likely influence of pornography on their own moral values, attitudes toward the opposite sex, sexual knowledge, sexual attitudes and sexual behavior. The measurement of perceived effects on others consisted of the same five items reworded to refer to other high school students by replacing "my own" with "other high school students'." Respondents were instructed to estimate influences on the following 5-point scale: (5) a large negative influence; (4) a small negative influence; (3) no influence at all; (2) a small positive influence; (1) a large positive influence.

Principal component analysis was performed to determine whether the self and others items would measure two different underlying dimensions. The results showed that the self and other items were clearly grouped in two factors and measured two underlying dimensions (see Table 1). The two-factor solution explained 69.4% of the total variance. The five "self" items were added and divided by five to create an index of "perceived effects on self" (Cronbach's alpha= .87, mean=2.97). The five "others" items were also added and divided by five to constitute an index of "perceived effects on others" (Cronbach's alpha= .90, mean=3.46).

The two dimensions of "perceived effects on self" and "perceived effects on others" produced a four-fold typology of third-person effects. As shown in Figure 1, high and low groups for each dimension were constructed by splitting each of the two index at the median, yielding a four-fold typology.

Table 1 about here

**Magnitude of perceptual bias.** Difference scores between perceived effects on self and perceived effects on others were computed to represent magnitude of perceptual bias.

**Support for restrictions on pornography**. Support for restrictions on pornography was measured with a four-item index. Respondents were asked to indicate their agreement (5=strongly agree, 1=strongly disagree) with a government legislation to ban R-rated pornographic films or programs, X-rated pornographic films or programs, pornographic publications and pornography on computer or CD Rom.

Principal component analysis showed that the four items were grouped in a single factor and measured the same underlying concept. The one factor solution explained 78% of the total variance. A measure of support for restrictions on pornography was created by adding the four items and dividing the sum by four (Cronbach's alpha= .91, mean=3.15).

Table 2 about here

**Exposure to pornographic media.** Exposure to pornographic media was measured and used as a control in the regression analyses because past research indicates that it is negatively related to support for restrictions on pornography (Thompson et al., 1990; Gunther, 1995). A list of 10 pornographic media was provided.

and respondents were asked how often they had seen each of them in the last one or two years. The response categories were: never (0), once or twice per year (1), once or twice per month (2), once or twice per week (3), and nearly every day (4). Answers on the five-point scales were used to compute percentages of exposure to each medium. Exposure means were computed for each medium. Thus, the higher the score, the more frequent the exposure to that medium.

A set of pornographic media exposure indices was constructed using principal component analysis. The 10 pornographic media exposure items yielded two factors (Table 3). Items 7-10 which loaded on the first factor constituted a measure of "pornography exposure in print media and on computer." The items were added and divided by four (mean=.56, Cronbach's alpha= .82). Items 1-6 loaded on the second factor. A measure of "pornography exposure on electronic media" was created by adding items 1-6 and dividing the sum by six (mean=.54, Cronbach's alpha= .82).

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Table 3 about here

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**Sexually permissive attitudes**. Due to its expected relationship to support for restrictions of pornography (Thompson et al., 1990), a measure of sexually permissive attitudes toward holding hands, kissing, love touching and sexual intercourse was developed for this study, based upon previous research (Lo et al., 1997; Cernada, 1986). Each respondent was asked to indicate his or her agreement (5=strongly agree, 1=strongly disagree) with these intimate actions by unmarried men or women with a casual person.

Principal component analysis showed that the items measuring sexually permissive attitudes toward a casual person were grouped in a single factor and measured the same underlying concept. These items were added and divided by four (mean=2.76, Cronbach's alpha= .85).

**Demographics**. Respondents were asked about their sex, years in high school and grade average. Years in high school were coded into three categories: first year (grade 10), second year (grade 11) and third year (grade 12). Grade average was coded into four categories ranging from upper quartile to lower quartile. Respondents were also asked their parents' highest level of education. Their parents' education was coded into seven categories ranging from less than elementary school to a graduate degree. These five demographic variables were also used as controls in the regression analyses because previous studies indicated that they were related to support for censorship (Erlick, 1974; White, 1986; Hense & Wright, 1992; Gunther, 1995; Rojas et al., 1996).

## Results

The results of the study revealed that all five research hypotheses gained basic support. The first hypothesis predicted that respondents will perceive pornography to have greater negative influence on others than on themselves. As expected, a majority of respondents (61.1%) perceived others to be more negatively influenced by pornography than themselves. Only 10.6% perceived more negative influence on themselves and 28.3% perceived no difference in influence.

The results of paired t-tests supported the existence of third-person effects for high school respondents. As shown in Table 4, respondents perceived pornography to have greater negative influence on others than on themselves in both the individual items and the combined effect index.

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Table 4 about here

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The second hypothesis predicted that Type 1 (perceived high effects on self and others) would be more likely to support restrictions of pornography than did other type respondents. A one-way ANOVA revealed a significant difference among the group means (F=28.18, df=3,1844, P < .001). A Scheffe test indicated that the mean for Type 1 (mean=3.40) was significantly greater than the means for Type 2 (mean=3.06) and Type 4 (mean=2.88). However, there was no significant difference between the means for Type 1 and Type 3. These results provide partial support for Hypothesis 2.

The third hypothesis predicted that Type 4 respondents (perceived low effects on self and others) would be less likely to support restrictions of pornography than did other types respondents. The Scheffe test also revealed that the mean for Type 4 (mean=2.88) was significantly smaller than the means for Type 1 (mean=3.40) and Type 3 (mean=3.21). However, there was no significant difference between the means for Type 4 and Type 2. Hypothesis 3 was also partially supported.

The fourth hypothesis predicted that magnitude of perceptual bias will not be associated with support for restrictions of pornography. To test this hypothesis, two separate hierarchical regression analyses were performed. As shown in Table 5, the first block of the regression equation entered sex, years in high school, grade average, father's education and mother's education as predictor variables, indicating that sex was the only significant, but most powerful predictor of support for restrictions of pornography. The second block included the two pornographic media exposure variables, revealing that both variables were positively related to support for restrictions of pornography. The final block of the regression equation provided the test of Hypothesis 4. As expected, the magnitude of perceptual bias was not a significant predictor of support for pornography restrictions. Even examining the third-person subsample of respondents who perceived pornography to have greater negative influence on others than on themselves (see Gunther, 1995), the magnitude of perceptual bias was still not a significant predictor of support for restrictions of pornography. Hypothesis 4 was supported.

Hypothesis 5 predicted that both perceived effects of pornography on self and perceived effects on others would be positively associated with support for restrictions of pornography. To test this hypothesis, another hierarchical regression analysis was performed. Table 5 reports the results of the hierarchical regression analysis in which demographic variables were entered first, followed by the two pornographic media exposure variables. The final block of the regression equation entered perceived effects on self and perceived effects on others.

The results of the regression analysis revealed that sex was the most powerful predictor of support for pornography restriction. Exposure to pornography in print media and on computer was negatively related to support for restrictions of pornography. The final block of the regression equation indicated that perceived effects on self was the second most powerful predictor of support for pornography restriction. The perceived effects on others was also a significant predictor of support for restrictions of pornography. Hypothesis 5 was also supported.

Table 5 about here

## Discussion

The results of this study clearly indicate that most respondents perceive pornography has a greater negative influence on others than on themselves. Such a finding is consistent with Davison's third-person effect hypothesis. In fact, the support for the existence of the third person effect is so robust that it is worth questioning whether further testing of hypotheses about its existence is needed.

Perhaps the most important contribution of this study is to demonstrate that the magnitude of perceptual bias is not a dependable predictor of support for restrictions on pornography. Previous studies have suggested that the magnitude of perceptual bias leads to some reaction in attitudes or behavior (Gunther, 1995; McLeod et al., 1997). This study shows that using magnitude of perceptual bias—the difference between perceptions of communication effects on self and others—may overlook those media consumers who do not exhibit the third-person effect and thus miss reasons for supporting or opposing controls on media. Thus, the perceived effects on self or others is a more relevant predictor of censorship attitudes than the magnitude of perceptual bias.

The present study also makes a contribution to the literature on third-person effects by developing a fresh typology to reflect the relationship between the perceptual and behavioral components. As expected, Type 1 (perceived high effects on self and others) is most likely to support restrictions on pornography, while Type 4 (perceived low effects on self and others) is least likely to support restrictions. Type 2 (perceived high effects on self and low effects on others) and Type 3 (perceived low effects on self and high effects are others) have similar attitudes toward media control. Either one of the perceptions of high negative effect from pornography on self or on others is related to support of censorship. This study shows that in examining the third-person perception of media effects on self and others as it is related to the behavioral component, the use of magnitude of perceptual bias misses some perception/behavioral relationships.

Future research may replicate this study on different topics such as news coverage, voting behavior, political advertising or media violence. Future research also needs to include a national sample to determine what variables are most effective in differentiating among the four types of third-person effects respondents, especially in their attitude toward restrictions of pornography.

Another important finding of this study is to show both perceived.effects on self and perceived effects on others are positively related to support for restrictions on pornography. The results of this study provide evidence for a linkage between the perceptual and behavioral components of the third-person effects. This linkage, however, is quite different from what previous research has suggested. It seems that individuals who perceive the media content as having greater influence on themselves and on others will be more likely to support media restriction. Our study proposes a rather complex theoretical relationship between the perceptual and behavioral components. Clearly, the theoretical relationship among perceived effects on self, perceived effects on others, and support for media restriction merit further research. Future work is needed to determine conditions under which perceived effects on self and perceived effects on others may or may not be related to support for media restrictions.

It should be noted, however, that in spite of the label, "behavioral effect," this study has not measured behavior. What we really have measured is attitude. Further researchers should extend this research to measure behavior--the actions initiated by persons who seek to initiate legislation or public policy initiatives to control the media available to others.

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| | | Perceived effects on others | | |
|---|---|---|---|---|
| | | high | low | Row Total |
| Perceived effects on self | high | Type 1<br>N=741(3.40) | Type 2<br>N=295(3.06) | N=1036(3.30) |
| | low | Type 3<br>N=216(3.21) | Type 4<br>N=596(2.88) | N=812(2.96) |
| Column Total | | N=957(3.36) | N=891(2.94 ) | N=1848(3.15) |

**Figure 1 :A typology of perceived effects of pornography on self and perceived effects on others**

Note: Figures in parentheses are means for support for restrictions on pornography.

**Table 1: Principal Component Analysis of Self and Others Items (Varimax Rotation)**

| Item | Factor Loading | |
|---|---|---|
| | Factor 1<br>Others | Factor 2<br>Self |
| Sexual attitudes-others | .84 | |
| Attitudes toward the opposite sex-others | .82 | |
| Sexual knowledge-others | .80 | |
| Sexual behavior-others | .79 | |
| Moral values-others | .76 | |
| Sexual attitudes-self | | .85 |
| Sexual knowledge-self | | .84 |
| Sexual behavior-self | | .79 |
| Attitudes toward the opposite sex-self | | .72 |
| Moral values-self | | .64 |
| Eigenvalues | 5.63 | 1.31 |
| Variance explained | 56.3 | 13.1% |
| Total percent of variance | 69.4% | |
| Cronbach's alpha | .87 | .90 |

### Table 2: Principal Component Analysis of Support for Pornography Restriction Items

| Item | Factor Loading |
|---|---|
| Pornographic publications | .92 |
| Pornography on computer or CD Rom | .92 |
| X-rated films or programs | .85 |
| R-rated films or programs | .84 |
| Eigenvalue | 3.12 |
| Variance explained | 78% |
| Cronbach's alpha | .91 |

**Table 3: Principal Component Analysis of Pornographic Media Exposure**

| | Factor 1 Print Media and Computer Exposure | Factor 2 Electronic Media Exposure |
|---|---|---|
| Pornographic comics | .87 | |
| Pornographic books | .82 | |
| Pornographic magazines | .77 | |
| Pornography on computer or CD Rom | .53 | |
| X-rated films at a theater | | .80 |
| X-rated rental films | | .73 |
| R-rated films at a theater | | .72 |
| R-rated rental films | | .68 |
| R-rated films or programs on CATV | | .53 |
| Sexually explicit films on special channels of CATV | | .52 |
| Eigenvalues | 4.81 | 1.11 |
| Variance explained | 48.1% | 11.1% |
| Total percent of variance | 59.2% | |
| Cronbach's alpha | .82 | .82 |

**Table 4: Mean Estimates of Influence of Pornography on Self and Others**

| Item | N | Self | Others | Difference | t-value |
|---|---|---|---|---|---|
| Total Perceived Influence on | | | | | |
| Moral values | 1854 | 3.29(.85) | 3.71(.94) | .42 | 20.26*** |
| Attitudes toward the opposite sex | 1850 | 3.10(.93) | 3.57(1.07) | .47 | 20.53*** |
| Sexual knowledge | 1854 | 2.70(1.05) | 3.19(1.23 ) | .49 | 20.40*** |
| Sexual attitudes | 1855 | 2.82(1.06) | 3.38(1.21) | .56 | 22.69*** |
| Sexual behavior | 1848 | 2.92(1.09) | 3.45(1.19) | .53 | 21.62*** |
| Combined influence | 1842 | 2.97(.82) | 3.46(.96) | .49 | 27.07*** |

Note: Figures in parentheses are standard deviation.
*** P<.001

**Table 5: Hierarchical Regression Analysis Predicting Support for Restrictions on Pornography**

| Variables | Full sample final B | Adjusted $R^2$ change | 3rd-person Subsample | Adjusted $R^2$ change | Full sample final B | Adjusted $R^2$ change |
|---|---|---|---|---|---|---|
| Demographics | | .06 | | .07 | | .06 |
| Sex | -.17*** | | -.17*** | | -.15*** | |
| Year in school | .00 | | .00 | | .00 | |
| Grade average | -.02 | | -.02 | | -.01 | |
| Father's education | -.03 | | -.07 | | -.03 | |
| Mother's education | -.02 | | .00 | | -.02 | |
| Exposure to pornographic media | | .09 | | .02 | | .02 |
| Electronic media exposure | -.09** | | -.10** | | -.06 | |
| Print media and computer exposure | -.10*** | | -.10* | | -.08** | |
| Third-person Variables | | .00 | | .00 | | .03 |
| Magnitude of the perceptual bias | .02 | | .02 | | | |
| Perceived effect on self | | | | | .11*** | |
| Perceived effect on others | | | | | .09** | |
| Total adjusted $R^2$ | | .09 | | .09 | | .11 |

307

Note: Beta weights from final regression equation with all blocks of variables in the model.
*P<.05, **P<.01, ***P<.001

# A VIRTUAL FETISH: THEMES OF A VIRTUAL COMMUNITY AS PRESENTED IN *TIME* AND *WIRED*

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# ABSTRACT:

# A VIRTUAL FETISH: THEMES OF A VIRTUAL COMMUNITY AS PRESENTED IN *TIME* AND *WIRED*

Two magazines—*Time* and *Wired*—offer extensive discourse about the Internet. This research compares and contrasts the social construction of the virtual community technology as illustrated in *Time* (a popular press publication) and *Wired* (a niche press publication).

The virtual community coverage of *Time* and *Wired* captures four predominant themes: business, entertainment, government, and society. Overall, both the popular press and niche press publications construct a positive and utopian view of the virtual community.

# A VIRTUAL FETISH: THEMES OF A VIRTUAL COMMUNITY AS PRESENTED IN *TIME* AND *WIRED*

## INTRODUCTION

A somewhat novel mania is sweeping society: the virtual community. The online virtual world of the Internet represents the current state of virtual reality, providing an immersive environment in which individuals may interact with others; this alternative-playpen-existence has reached fetish status. People everywhere are discovering the lure of chat rooms, e-mail systems, internet games, and usenet news groups. When users enter the Internet world, they are "logging on to a great computer-mediated gabfest, an interactive debate that allows them to leap over barriers of time, place, sex and social status" (Elmer-Dewitt, 1993, p.60). Chat rooms invite visitors to participate in live discussions revolving around an eternal mix of topics, creating an instantaneous coffee-house environment. E-mail systems enable users to transmit messages electronically, providing an alternative to postal (commonly referred to as "snail mail") and telephone correspondence. Internet games immerse players in surreal realms with other on-line gamers, shaping clans of allies and rivals. As Schroeder (1994, p. 526) points out, "science is no longer seen as a tool for mastery over the world, but rather as the handmaiden of magic." Finally, usenet news groups prompt the exchange of discussion on a myriad of subjects, triggering an anarchy of voices. All of these examples prove one fact: the on-line virtual community is booming.

Just a few years ago, many viewed the virtual community as a very eccentric entertainment available mostly to those residing in major cities. The youth culture, academic theorists, and developers of technology all influenced the Internet, which offered "a common worldview and a common way of life among the members of a cultural avant-garde in London and on the US West Coast, two global centres of the information and communication industries" (Schroeder, 1994, p. 524). Today, the virtual reality of the Internet enjoys widespread acceptance and attention. The computer has evolved into an increasingly necessary and welcome tool in homes, schools, and businesses across the world. Society has experienced "a way of looking at the world that combines an infatuation with high-tech tools and a disdain for conventional ways of using them" (Elmer-Dewitt, 1993, p. 59). Families shape the Net for leisure. Teachers mold the Net for education. Corporate businesses develop the Net for efficiency.

## RESEARCH QUESTIONS

Obviously, the Internet is becoming increasingly ubiquitous. Because of this, traditional media (magazines, newspapers, and television) are embracing the opportunity to engage in discourse about the Net. This research offers a general thematic and rhetorical analysis of selected media's presentation of this virtual reality technology. Some logical questions regarding the virtual community follow:

1. What primary themes are the media offering?
2. Is the presentation of these themes positive or negative overall?
3. Who, according to the media, are the major players hoping to exercise some level of control over the virtual community?
4. Who is attempting to profit in the new environment?
5. What strata of society are participating in these virtual communities?

## METHOD

Two magazines—*Time* and *Wired*—offer extensive discourse on the aforementioned topics. The social constructionist perspective serves as the theoretical framework for this study. This research will compare and contrast the social construction—the general thematic and rhetorical treatment—of the virtual community technology as illustrated in

*Time* (a popular press publication) and *Wired* (a niche press publication). The popular press publication caters to a very general public, while the niche press publication targets a distinct group of computer aficionados. The content for analysis consists of various articles from an 18-month period, ranging from May 1996 through October 1997. A census sample was collected from *Time* for a total of 17 relevant articles. However, a purposive sample had to be taken from *Wired* due to the subject nature of the publication. To best match the *Time* sample, one article per month was selected from the *Wired* issues. (Note: Two issues were unavailable from the resource pool—July 1997 and October 1997—and the February 1997 issue failed to provide a significant article. So, three random issues of *Wired* are represented twice in the sample of articles.) The virtual community coverage of *Time* and *Wired* captures four predominant themes: business, entertainment, government, and society. The following table illustrates the distribution of articles by publication and theme:

| | *TIME* | *WIRED* |
|---|---|---|
| BUSINESS | 7 | 4 |
| ENTERTAINMENT | 5 | 3 |
| GOVERNMENT | 2 | 5 |
| SOCIETY | 3 | 6 |

*Time*'s coverage proves somewhat disproportionate, favoring the business and entertainment themes. On the other hand, *Wired*'s coverage displays a more proportionate distribution among themes, but leans slightly toward the issues of government and society.

## RESEARCH FINDINGS

### A VIRTUAL FETISH: FOCUS ON BUSINESS

In its discussion of business in the virtual community, *Time* reflects on small businesses as well as corporate giants—Microsoft and Netscape—who are waging war with each other to gain widespread browser acceptance with Internet users. *Time* indeed links hype with technology. *Wired* constructs the same overall positive presentation, although the primary focus tends to be on the absence or presence of middlemen in online business transactions, as well as how specific companies are molding the new technology. All of these companies (mentioned in both publications) seek to not only control the evolving landscape of the virtual world technology, but also to profit from it. Only the niche press publication indirectly and directly mentions the specific strata of society that is engaged in online business. Indirectly, it seems safe to assume that users would be middle class or higher who own computers and also possess credit cards with which to engage in online transactions. Directly, *Wired* notes that one particular corporate guru cooperates with Clinton's vision of getting inner-city and rural residents connected to the virtual community, thus expanding the parameters of the online population.

#### ❖ *Time*

This popular press publication presents a positive perspective of certain business realms of the virtual community. Business ventures in the Net world range from virtual shopping malls to virtual real estate. Even fashion exists in the realm of the virtual. The Style Channel on America Online runs the Virtual Agency, which serves as a counseling and information center for aspiring models. A *Time* magazine article (Cray et al., 1997) describes the former models as "tech-savvy divas" who are ensuring that the fashion world stays in step with technology. The popular press publication portrays a positive image of those who are learning and using society's newest medium.

Also eager to maintain pace with technology is an individual best described as a virtual librarian: Brewster Kahle. As a *Time* magazine article (Cray et al., 1997) points out, "Today's hit home pages evaporate into electrons as soon as they've outlived their utility." So, it seems that although the virtual community of the Internet remains here to stay, some fear that the thoughts exchanged therein are transitory. Kahle hopes to combat the evanescent quality of virtual content by preserving digital records, which will be available to those seeking Internet-based information through his profit venture: ALEXA Internet.

Quite a bit of profit in the virtual community realm lies in the game entertainment business. *Time* covers one particular gaming company that caused quite a stir: id. President John Carmack and game architect John Romero introduced a phenomenon with the computer games *Doom* and *Quake*. The games revolve around interactive virtual worlds that totally titillate "The twitchy teenagers and addicted adults who spend hours at a time blasting away the phosphorous phantoms on their PC screens..." (Quittner, 1996, p. 62). Across the world, ultimate fans bang away on computer keyboards on Friday and Saturday nights instead of pursuing traditional weekend entertainment such as concerts, parties, and theatre. The visionaries could not be more pleased, since "id's 3-D bloodfests have spawned a worldwide gaming revolution and made its founders cult heroes and multimillionaires before age 30" (Krantz, 1997c, p. 56). Unfortunately, though, the dynamic starters no longer exist. John Romero left id with Mike Wilson to form ION Storm, a competitor. Wilson professes faith in ION's ultimate goal, which "is to make computer gaming a mass medium 'in the same league as film, TV and music'" (Krantz, 1997c, p. 57).

Considering the current success rate of the Internet gaming industry, the concept seems feasible.

Moving on, *Time* also offers insight about three corporate giants that are shaping the terrain of the virtual community: Cisco, Microsoft, and Netscape. First, Cisco dominates the Internet router business. Routers are simply devices that link computers to networks, enabling individual computers to correspond with one another via the Internet; without routers, the virtual community could not exist. *Time* (Ramo, 1997, p. 51) presents a rather unflattering picture of the technical side by saying, "Late at night, when corporations sleep, 'geek squads'—the human infrastructure of the information age—stuff routers into closets, under desks or anywhere out of sight. It is not a business that produces headlines. It does, however, produce stock market rockets." Two Stanford academics (a husband and wife team) created the router to solve the inability of the college's mainframe to send messages; they simply wanted to converse via computer dialogue. The rest is making stock market history. Now, "Cisco owns the horses of the fastest-growing Pony Express in history" (Ramo, 1997, p. 51).

Next, *Time* focuses on Microsoft and Netscape, two current behemoths in the computer industry. The popular press publication presents a clear theme: Microsoft and Netscape are at war. The device caught in the middle is the browser, which eased the sting of technology by bringing "order to the chaos of the World Wide Web, a corner of the Net stuffed with text, sounds and pictures" (Ramo, 1996a, p. 58). Browsers allow users to easily navigate the virtual community. Microsoft's version of the browser is Internet Explorer. The motto—"When I'm awake, I'm working"—drives the Microsoft vision, and CEO Bill Gates (cited in Ramo, 1996a) offers obvious hype on behalf of the Internet:

> The Internet is a revolution in communications that will change the world significantly. The Internet opens a whole new way to communicate with your friends and find and share information of all types. Microsoft is betting that the Internet will continue to grow in popularity until it is as mainstream as the telephone today.

So, the grandiose notions that accompanied past innovations also supplement today's technology that makes the virtual community possible.

Finally, *Time* discusses Navigator, Netscape's version of the browser. Netscape represents "one of history's headiest corporate ascents, as the ubiquitous Netscape Navigator browser helped spawn the world's startling online stampede" ("The 25 Most Influential People in America," 1996). CEO James Barksdale presents a vision to his employees of working better, not more, and "he radiates the same cocksure attitude, bred from an ability to project a vast strategic vision and master simultaneously each of its components" as his competitors (Ramo, 1996a, 60). In the midst of intense competition from Microsoft, Netscape enjoys a loyal client base. How these two companies (and others) fight the browser battle will determine how users will occupy the virtual community. Competition in the computer industry thrives, creating newer tools, faster access, and greater technological flexibility for the public. As *Time* tells the story, in the "information-age corporate warfare....victory today means little more than the right to come back and fight again tomorrow" (Ramo, 1996a, p. 64).

### ❖ *Wired*

This niche press publication gives a straightforward mention of several former Atari employees who laid some groundwork for today's virtual community. Scott Fisher founded the Virtual Environment Workstation project in 1985, an early development in virtual reality. Brenda Laurel, whose name appears in a large portion of literature about virtual landscapes, "has written extensively about interface design, suggesting models based on drama to explore the relationship between people and computers" (Montfort, 1996, p. 166). There is no doubt that individuals are becoming increasingly familiar with computers, breaking down the barriers of apprehension toward technology.

With regard to general business in the virtual community, *Wired* discusses the process of "reintermediating." Virtual shopping eliminates such annoying experiences as dealing with a car salesman, thus allowing automobile buyers to take the time to seriously consider their purchases without the hassle of pressure. However, web middlemen are introducing themselves more often, claiming to offer some advantage to the virtual customer. One example is travel planning, where "a great deal of hocus-pocus has been introduced—the purpose is to make it almost impossible for you or me to understand the jargon of airline reservations or the price changes" (Negroponte, 1997, p. 2). Another example is Virtual Vineyards, which arranges the delivery of wine directly to homes. The company itself, though, does not actually possess any inventory; it simply acts as a link between the vineyards and the consumers. *Wired* (Negroponte, 1997, p.3) proposes a new intermediary that grants personal advice to individuals according to personal taste so people do not waste time reading bad novels, for instance: "The digital intermediaries may change that forever. I want them to. So do you."

On the other hand, not everyone is reintermediating. David Shaw, for one, does not believe in it. Shaw is launching FarSight, a virtual financial mall where individuals can access personal checking accounts, credit card accounts, and automated stock trading (to name a few perks). As far as Shaw is concerned, "once computers have replaced these tassel-loafered leeches [finance experts], a new financial era will dawn. Shaw calls this golden age 'disintermediation,' because it involves 'pulling intermediaries out of the loop and letting customers get closer to each other'" (Bass, 1997, p.210). Shaw is also working with President Clinton to provide as many people as possible with Internet access, through free e-mail to inner-city and rural residents, as well as wired classrooms in schools. Perhaps if the computer industry recognizes the ills of society and sculpts technology accordingly, everyone will benefit. According to Wired (Bass, 1997, p. 211), "With wonderful good humor and efficiency, he [Shaw] is offering to help straighten it out with a wave of his computational wand."

Finally, some companies are neither interested in reintermediating nor disintermediating; they simply want to become more efficient by using the virtual community. FedEx (which competes with UPS even in cyberspace) provides an example of this notion. FedEx believes in learning the technology, molding it to fit specific corporate needs, and then establishing a comfort level for customers so they, too, interact in virtual business via web sites. Fred Smith (cited in Lappin, 1996b), founder of FedEx, offers grand plans for the future when he says, "The same type of effect that Wal-Mart had in the retailing sector—that's what the Internet is going to do to every business."

The following table summarizes the presentations of *Time* and *Wired* on the theme of business:

SOCIAL CONSTRUCTION OF BUSINESS THEME

| | *TIME* | *WIRED* |
|---|---|---|
| THEME PRESENTATION | Positive | Positive |
| MAJOR PLAYERS | Small business ventures (virtual modeling agencies, virtual libraries); id; Cisco; Microsoft; Netscape | Former Atari employees (Scott Fisher, Brenda Laurel); Virtual vineyards; David Shaw; Fed Ex |
| PROFIT SEEKERS | same as above | same as above |
| STRATA OF SOCIETY | not mentioned | Shaw helps to expand by wiring inner-city and rural residents |

## A VIRTUAL FETISH: FOCUS ON ENTERTAINMENT

Everyone loves good entertainment, and the virtual community is no exception. The popular press publication—*Time*—presents various aspects of entertainment in the virtual community, ranging from virtual concerts and vacations to the introduction of gaming software for girls. *Wired* also discusses the gender issue in and offers an in-depth look at interaction inside metaworlds. Both publications offer utopian visions of the entertainment theme. Major players include companies that target both the girl and boy gaming population, such as id and Purple Moon.

### ❖ *Time*

For those individuals who require more excitement than playing Net games at home in front of their personal computer screens, GameWorks serves as a festive alternative. Created by Steven Spielberg, the 30,000-square-foot electronic playground offers guests various virtual-reality diversions, including fighter-plane simulators and an Internet lounge (Baumohl, Cole, and Eisenberg, 1997). Of course, who could be more perfect to mold a virtual arcade than Spielberg, the mogul of the fantasy film industry?

Visitors to the virtual community also have the opportunity to catch a concert. As *Time* (Krantz, 1996, p. 74) points out, the soundscape of the Net is metamorphosing since "the music industry is getting wired with a vengeance, and that's changing everything: how bands get heard, how performers develop followings, even how music gets distributed." By broadcasting their music on the Web, musicians gain immediate access to a global audience; then, all they have to do is strike a chord with potential fans. However, not everyone expects to benefit from the virtual music scene. Retail music outlets fear the most.

Logically, fans would enjoy downloading entire pieces of music onto blank compact discs, so if the technology were to catch up with the desire, traditional music stores could experience trouble. *Time* (Krantz, 1996, p. 76) says, "But that's the way it has always been with rock 'n' roll. One person's dream is another's nightmare."

For those who are not craving a nightmare, perhaps a virtual vacation would soothe the soul. Planet 9—a company based in San Francisco—now offers various cityscapes of tourist cities via the Web. The graphics remain rough; however, the ability to instantaneously zap the space between geographical locations is quite real. *Time* (Dworetzky, 1997, p. 92) reports that "This brave new virtual world will let us visit many places that inaccessibility, inconvenience and danger have heretofore made remote—even exotic."

Finally, *Time* explores the issue of gender in the entertainment realm of the virtual community. In the past, virtually all of the computer games targeted males. The female market "has been all but ignored in favor of the seemingly bottomless appetite of boys and young men for so-called twitch games, like the bloody, light-speed shoot-'em-ups Quake and Doom" (Krantz, 1997b, 9. 48). However, that scenario is changing. Brenda Laurel (formerly with Atari and mentioned earlier in this research) acts as a pioneer in the girl gaming industry. She receives financial backing from Interval Research to run Purple Moon, a company dedicated to creating CD-ROMS for preteens. Research reveals an interesting irony: "Girls don't think boys' games are too hard; they think they're too stupid" (Krantz, 1997b, p. 49). Instead of engaging girls in the monotony of "bang-bang-you're-dead," Purple Moon invents games with complex emotional dimensions. Some of the games even boast characters that create their own Web pages. So, it seems the virtual community even welcomes fictional beings (although most humans often become fictional by the time they complete their online personas). These games that target females are not only providing the preteens with escapism but also with increased computer skills that will give them an edge in the job market later.

### ❖ *Wired*

*Wired* also deals with the issue of gender in computer games. Beato (1997, p. 98) expresses that the goal is "To reach the testosterone-spattered war rooms of the interactive entertainment industry and persuade the pasty knuckle-draggers who reside there to conceive, develop, and deliver games for girls. Call it *Woom*." The list of corporate players sweeping in on the new target is long: DreamWorks Interactive, Hasbro Interactive, Mattel Media, and Phillips Media, to name a few. *Wired* also mentions Laurel and explains how the new games for girls incorporate strong narrative and social elements. There is no doubt that the girl game market possesses extreme potential, because "For many girls, the online world has already begun to supersede that sacred tool of female adolescence" (Beato, 1997, p. 104).

Of course, the insurrection of girl games is not diminishing the power of boy games. A *Wired* (Laidlaw, 1996, p. 126) article traces the steps of the gaming giant id as it developed the design for *Quake*, its latest release, which "represents the next step in utterly immersive gameplay." These computer games (with some assistance from the users' willing suspension of disbelief) swallow players into a realm of nightmarish ambiance, a favored escapism. The next goal is to reach the level of three-dimensional environments in which players interact simultaneously, and "At id, a handful of programmers are channeling this dream into an action game whose easily hackable software will ensure that the cyberspace revolution won't be shaped by a few competing corporate giants. It will be shaped by game players. Kids. Lots of them" (Laidlaw, 1996, p. 126).

Finally, *Wired* presents a discussion of metaworlds. Metaworlds are those places in which people experience the full vitality of the virtual community. Many of the normal elements that exist in reality also occur in metaworlds: advertising, conversations, crimes, gestures, weddings. People create avatars (animated icons) which represent them while they are in the metaworld. There, just as in reality, they meet friends and enemies; they live. Each metaworld boasts unique environments. For instance, WorldsAway "looks cool—the background graphics are in a hallucinatory art nouveau nouveau style…but the software feels like something that used to run on a Commodore 64" (Rossney, 1996, p. 202). However, this slow technology has not suppressed interest and participation in metaworlds. Randy Farmer (cited in Rossney, 1996) with Electric Communities offers the prophetic notion that metaworlds will become as common as e-mail currently is, resulting in stronger real-world communities as "We…see the reestablishment of geographical communities by moving the front porch into cyberspace."

The following table summarizes the presentations of *Time* and *Wired* on the theme of entertainment:

SOCIAL CONSTRUCTION OF ENTERTAINMENT THEME

| | *TIME* | *WIRED* |
|---|---|---|
| THEME PRESENTATION | Positive | Positive |
| MAJOR PLAYERS | Steven Spielberg;<br>Music industry (musicians, record labels);<br>Planet 9;<br>Purple Moon | DreamWorks; Hasbro;<br>Mattel Media; Phillips Media;<br>Purple Moon (to name a few); id;<br>Metaworld companies |
| PROFIT SEEKERS | same as above | same as above |
| STRATA OF SOCIETY | families, preteen girls | preteen girls, males |

## A VIRTUAL FETISH: FOCUS ON GOVERNMENT

Government intervention in the virtual community continues to be an issue of major concern. *Time* (with a somewhat neutral perspective) mentions taxation and regulation of Internet gambling. *Wired* offers an intense look at government's relationship with the virtual world, especially access, censorship, and education; the presentation is extremely pro anti-government involvement. Government entities (such as Congress and the FCC), Internet service providers, telephone companies, and the general public represent the major players in this particular theme.

### ❖ *Time*

The popular press publication passes only a cursory glance at the theme of government in the virtual community. One article poses the government dilemma about how to tax business that occurs on the Net. This reveals a clear battle between commercial interests and government interests, and the winner will shape virtual business. Another *Time* article deals with an issue involving the judicial branch of government: virtual gambling. Krantz (1997a, p. 61) points out that "In the ongoing quest for an Internet bogeyman, pornography still gets the most ink, but gambling is where the action will be." For now, much confusion exists about how current laws apply to the virtual community; only time and perhaps some trial-and-error will present solutions. In the meantime, Dave Herschman (cited in Krantz, 1997a, p. 62) of Virtual Vegas, Inc. offers a suggestion: "Instead of sporadic antigambling crackdowns, we should be closely monitoring and taxing this industry." Once again, capitalist ventures are attempting to reach agreements with government about how to sculpt the Net.

### ❖ *Wired*

The niche press publication delves into the debate over who should control Internet access: the service providers or the telephone companies? *Wired* (McCullagh, 1997, p. 54) sets the scene as follows:

> The stage has been set for a showdown between a telephone industry regulated since its birth and a new economy that has prospered with surprisingly little government interference. The tug-of-war pits buttoned-down monopolies against a rough-and-tumble collection of Silicon Valley bigwigs. Faced with potential disaster, the high tech coalition has had no choice but to learn the art of war as it is waged within the confines of the FCC's arcane rulemaking process.

So, the somewhat stagnant battle grows more fierce. The original network is designed to handle voice rather than data traffic, and apparently phone lines are getting increasingly bogged down. Ed Young (cited in McCullagh, 1997), a lobbyist for Bell Atlantic, grumbles that "There's no longer a free lunch. Internet welfare has to stop." However, *Wired* seems to think the telcos are fighting a losing battle. The telcos are ignoring available technology such as ISDN and xDSL that could handle the data traffic well; however, they have not chosen to make the innovations economically feasible enough for the general public to embrace them. In addition, claims made by the telcos that flat-rate pricing is a major culprit of the clogging are unfounded, especially since the phone companies have attempted their own flat-rate Internet fees. *Wired* calls the telcos "scaremongers" and refers to the entire situation as "wonk warfare." However, one positive outcome is occurring since "In the face of the telcos' onslaught, netizens are joining ranks with business interests to lobby the government and protect the Net" (McCullagh, 1997, p. 183).

Next is the issue of government censorship in the virtual community. A *Wired* article exhibits excerpts from a legal brief challenging the Communications Decency Act, conveying the analogy that "A specter is haunting cyberspace—the specter of government censorship" (Lappin, 1996a, p. 84). Arguments against censorship include the unique nature of the Internet, the active capacity of the users, and the ridiculous notion that all Net material should be reduced to an appropriate level for minors. The brief (cited in Lappin, 1996a) suggests the utopian idea that "In the 21st century, the Internet—if allowed to flourish unhindered by government censorship—can revive the now little-used public square and convert it into a global medium of communication and discourse."

Finally, *Wired* addresses the seemingly simple idea of education. In this instance, it seems members of government need to gain knowledge about the virtual community before they assume the task of regulating it, and it does not help matters to know that "Most of Congress is in profound datashock already. Hardly any of them has an attention span longer than an elevator ride" (Barlow, 1996, p. 56). According to the *Wired* article, current members of government matured during the age of television, which vastly differs from the current virtual community. Barlow (1996, p. 56) expresses his lack of optimism when he says, "So I'm not sure it would be a good idea to further inflict the riotous informational fertility of cyberspace upon an organism that evolved in the more temperate zones of the late 18th century....The political system we've got is too tangled in the parasitic undergrowth of the last two centuries to process or understand what is being created for the century to come." This notion proves especially depressing when one considers the fact that society fast approaches the next millenium. Nevertheless, some members of Congress are enlightened and eager to pass the intelligence to others in government. Representative Rick White (1996, p. 80) reveals that "the mere mention of the Internet elicited blank stares from many of the assembled legislators....Congress is lost in cyberspace." He hopes to combat the ignorance with the Internet Caucus, which focuses on putting members of Congress online, actually interacting with the technology. Such a step proves necessary to avoid the virtual blind leading the virtual sighted.

The following table summarizes the presentations of *Time* and *Wired* on the theme of government:

SOCIAL CONSTRUCTION OF GOVERNMENT THEME

| | *TIME* | *WIRED* |
|---|---|---|
| THEME PRESENTATION | Neutral | Positive (pro anti-government) |
| MAJOR PLAYERS | Government,<br>Commercial interests,<br>Virtual casinos | Government,<br>Internet service providers,<br>Telcos,<br>Public/Net users |
| PROFIT SEEKERS | Commercial interests,<br>Virtual casinos | Internet service providers,<br>Telcos |
| STRATA OF SOCIETY | not mentioned | not mentioned |

## A VIRTUAL FETISH: FOCUS ON SOCIETY

At the core of the online virtual world lies an evolving sense of community that perhaps successfully fills a void in many people's daily lives. *Time* positively constructs this theme through discussions of Net weddings, funerals, and religion; the popular press publication also covers the privacy issue. *Wired* reports on different areas of the virtual community, focusing primarily on the current positive nature of the Net and the continued freedom of expression for people on the Web. Major players range from Net chapels to Net cops.

### ❖ *Time*

It seems the virtual community participates in all sorts of traditional ceremonies, even weddings and funerals. GlamOrama's Internet wedding chapel functions just as the real-life version, offering an off-beat alternative to the conventional (sometimes mundane) ritual. The chapel even sends e-mail invitations. As *Time* (Cole et al., 1996) mentions, "The idea does have a certain seductive magic." Then there are the on-line funerals. Many Americans devoted to hectic lifestyles are often unable to attend the actual ceremonies. So, Cybermourn offers videoconferencing suites to funeral directors so they can place memorial services on secure Websites. The goal is "to tap the 'guilt market' and provide a virtual outlet for grief, for eulogies and as a way to comfort the bereaved" (Cole et al., 1996).

Along the same concept of virtual rituals, the popular press publication devotes an article to religion in the virtual community. *Time's* (Ramo, 1996b, p.60) impression of religion on the Net appears clear:

> Almost overnight, the electronic community of the Internet has come to resemble a high-speed spiritual bazaar, where thousands of the faithful—and equal numbers of the faithless—meet and debate and swap ideas about things many of us had long since stopped discussing in public, like our faith and religious beliefs. It's an astonishing act of technological and intellectual mainstreaming that is changing the character of the Internet, and could even change our ideas about God....For all their fire and testosterone, these chat rooms and bulletin boards draw scores of believers hunting for new ways to understand their old religions.

Parishes are establishing cyberchurches in order to maintain close contact with their congregations. *Time* (Ramo, 1996b, p. 60) also suggests that the implications of virtual religion run deeper, since the Internet itself "is a vast cathedral of the mind, a place where ideas...can resonate, where faith can be shaped and defined by a collective spirit. Such a faith relies not on great external forces...but on what ordinary people...can create on this World Wide Web that binds all of us." Indeed, society possesses some power to determine the course of virtual community technology.

One of society's biggest concerns with the evolution of the virtual community is privacy. Unfortunately, immediate availability of particular types of public information also means instant access to certain bits of private information. As U.S. Senator Dianne Feinstein (cited in Quittner, 1997) points out, "People are losing control of their identities. Our private lives are becoming commodities with tremendous value in the marketplace." Legislation such as the Personal Information Privacy Act of 1997 could curtail private information in the virtual world; however, the final saga has yet to unfold.

### ❖ *Wired*

Tim Berners-Lee invented the World Wide Web, yet he did not earn a cent from its creation. As far as Berners-Lee (cited in Schwartz, 1997) views it, "For something like the Web to exist, it has to be based on public, nonproprietary standards." Only now can a concept like "global village" become reality. Anyone and everyone, with access to a computer, may interact in the virtual community. The only problem arises when one attempts to infuse some order to the chaos of the Web's evolution process, "a task Berners-Lee describes as frantically trying to steer a bobsled that is careering downhill at ever-accelerating speeds" (Schwartz, 1997, p. 140).

One particular *Wired* article focuses on this apparent chaos and its potential evil. As always throughout history, each new medium bears the weight of social diseases. Traditional mass media often attempt to rhetorically demolish a burgeoning mass communication tool, such as the Internet, and "Perhaps when fortified with an ample supply of quotations from get-tough bureaucrats and hand-wringing policy wonks, such worries seem credible" ("What Have They Been Smoking," 1997). However, *Wired* quickly rescues the virtual world of the Web. The niche press publication ("What Have They Been Smoking,"

1997) notes that "in the end, articles that link the Internet to social pathology inevitably say more about the antidemocratic impulses of the people who write them than they do about the Internet itself." The virtual community did not spawn drugs, pornography, or cult suicides. The Net simply provides a new tool that allows a more efficient and widespread communication of social norms and abnorms that already existed.

Nevertheless, certain self-proclaimed watchdog groups—like the CyberAngels—have set out to protect the virtual community from cybertrash, which can take the form of anything from cybersleaze to cybersluts. Despite the seemingly good intentions of the CyberAngels, *Wired* (van Bakel, 1996, p. 90) is not amused and says, "Predictably, the group has vowed mainly to go after online child pornographers, those semimythical bogeymen of the electronic age." After all, some glaring problems with the group exist. To begin, the commandant of the CyberAngels does not own a computer and has never even entered the virtual community. The members of the loose organization also appear to have no real grasp of First Amendment issues, as far as what is and is not legal in this country. Finally, the CyberAngels hold no connection to official law enforcement agencies, and could therefore intrude upon current investigations. *Wired* (van Bakel, 1996, p. 91) comments that "the group has caught flak from those who see the CyberAngels as a band of clueless Ninja Turtles whose ideas are grandiose, misguided, and kooky." Lance Rose (cited in van Bakel, 1996) agrees and says, "What the CyberAngels are doing would be just wonderful if they weren't also guilty of a jaw-dropping mixture of hubris and naivete that, in its sum total, makes them at least as great a problem as whatever it is they're out to contain or destroy." It seems the power to control content in the virtual community should remain distributed among the people rather than dictated by ignorant cybercops.

The following table summarizes the presentations of *Time* and *Wired* on the theme of society:

SOCIAL CONSTRUCTION OF SOCIETY THEME

| | *TIME* | *WIRED* |
|---|---|---|
| THEME PRESENTATION | Positive | Positive (as free, democratic culture) |
| MAJOR PLAYERS | GlamOrama;<br>Cybermourn;<br>Virtual churches;<br>Government (privacy issue) | Tim Berners-Lee,<br>Conservative mainstream media,<br>CyberAngels |
| PROFIT SEEKERS | GlamOrama<br>Cybermourn | not mentioned |
| STRATA OF SOCIETY | not mentioned | not mentioned |

## CONCLUSIONS

In conclusion, this research reveals the social construction of virtual community technology as illustrated in *Time* (a popular press publication) and *Wired* (a niche press publication). *Time* emphasizes the themes of business and entertainment, whereas *Wired* focuses more on the government and society themes. However, both the popular press and niche press publications construct a positive and utopian view of the virtual community. Howard Rheingold (cited in Hafner, 1997) captures a fading perspective of the virtual world when he says:

> It's this territory where you know your behavior is somehow obsessive and taboo in the Protestant sense, that you should be working, that there's something sick and dehumanized about spending time doing this, but you also know that it's sociable, and you're doing it together. That was the unholy attraction of it.

Now, it appears this man-machine interaction has evolved into a pleasant alliance that will (according to the press construction, at least) not only build a true global village, but also strengthen the local community. Hence, the strata of society populating the virtual world will likely expand.

*Time* discloses several major players who are shaping the virtual community technology: Cisco, id, Microsoft, Netscape, Purple Moon (to name a few). *Wired* adds to this network with David Shaw, Fed Ex, telephone companies, and various government agencies. Both press publications weave an extensive web of individuals and corporations that possess the power to profit from and perhaps even control the virtual community. Of all these forces, *Time* and *Wired* appear supportive of all but one: government.

Despite the positive outlook for the virtual community technology illustrated in *Time* and *Wired*, not everyone believes the road ahead will be so smooth. If this virtual fetish consumes too many minds, repercussions could indeed follow. Jaron Lanier (1996, p. 160) notes that "The whole point of the Net is empowerment of the people, not the computers. That happens only if people choose to be empowered. Let's not blow this chance for more human autonomy because we're caught up in the fantasy of machine intelligence." Ultimately, people—not science, not technology, not the media—will decide what they want from this burgeoning virtual community. Slouka (1996, p.32) offers a seed for thought:

> As we plummet through the looking-glass, however, we would do well to bear in mind that beyond that Orwellian and seemingly ubiquitous adjective "virtual" is a marketing scheme of unrivalled audacity, unprecedented scope, and nearly unimaginable impact: a scheme that is...designed to sell us copies of the things we already have available to us for free—life itself.

The next millenium approaches, and society should greet it with a fresh and open state of mind and spirit. Whether virtual or real, life is for living.

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# Mood Congruence and the Utility of Sad Media Content–An Exploration of "Wallowing"

by

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# Mood Congruence and the Utility of Sad Media Content–An Exploration of "Wallowing"

## Abstract

Drawing on the psychological literature on mood congruence, and the communication literature on mood management and uses and gratifications, a model is developed which examines functional congruent affect-seeking media behavior (i.e., "wallowing"). Questionnaire data from 86 undergraduates reveal (1) the existence of three distinct types of wallowing (active, passive, and "cathartic crying"), (2) no relationship between wallowing and media content preferences, even under conditions of state depression, and (3) some support for the prediction that wallowers will be more likely than non-wallowers to respond to depression with greater functional use of sad content.

## Introduction

> *I had a long talk with that lady in musical therapy, Johnny, and she says that Mozart's the boy for you--the broom that sweeps the cobwebs away. . . They have music for dipsomaniacs, and music for melancholiacs, and music for hypochondriacs. I wonder what would happen if somebody got their files mixed up.*
>
> --Midge Wood (Barbara Bel Geddes) to John "Scottie" Ferguson (James Stewart) in Vertigo (Hitchcock, 1958)

To date, there is no *movie* or *TV program* for the therapist to prescribe. When the new field of Filmic Therapy emerges, what will be the prescription for hypochondria, or for depression? Will it be a Marx Brothers comedy? An empathetic, mood-congruent program such as Terms of Endearment? Or, a meta-level examination of depression itself, such as Vertigo? Our rumination on this subject may provide ideas for future "brooms that sweep the cobwebs away."

This piece of research questions the conventional wisdom that all negative mood states result in efforts to immediately improve one's mood. A variety of literatures from psychology and communication are examined to develop a model of "wallowing," wherein negative media content may serve the functions of mood maintenance and eventual release from the source of noxious moods, including depression.

### Mood and Depression

Scholars continue to present various definitions for the constructs of affect, emotion, and **mood** (Batson, Shaw, & Oleson, 1992; Fiske & Taylor, 1991; Frijda & Mesquita, 1994; Guerrero, Andersen, & Trost, 1998). For the purposes of this paper, the following definition of mood will be used: A positive or negative orientation affecting a wide range of social cognitions and behaviors, not fleeting but with some duration, and with a non-specific target. (In contrast, affect is seen as quite target-directed, and emotion is seen as shorter-term, with clear physical manifestations, e.g., crying.)

Weary and Edwards (1994) declare **depression** and anxiety to be "two of the most prevalent mental health problems of today" (p. 291), a statement supported by a computer database search that identified 620 journal articles on depression since 1983. Depression has been variously viewed as either trait or state (Weary & Edwards, 1994); for this research, the latter approach is taken (Lubin, 1965).

While a "common sense" interpretation might predict that individuals will always hope to improve the positive valence of their mood state, that such improvement will be functional, and that, correspondingly, depressed individuals will uniformly seek to alleviate their depression, there are at least two theoretic perspectives that might predict otherwise. First, in a review of applications of excitation-transfer theory, Fiske and Taylor (1991) report that disgust can facilitate the enjoyment of humor, or of music.

The second perspective that speaks to the possibility of the functional perpetuation of negative mood states is that of **mood congruence** (Bower, 1992; Fiske & Taylor, 1991; Weary & Edwards, 1994). A number of propositions have been derived from this perspective: (1) Individuals will seek mood-congruent stimuli, (2) mood-congruent stimuli will be more fully cognitively processed, (3) mood-congruent stimuli will be better recalled at a later time, and (4) stimuli will be better recalled under mood conditions that are consistent with those under which the stimuli were first encountered (called mood-state dependent retrieval, or MDR). Although in aggregate the evidence is stronger for positive than for negative moods (Fiske & Taylor, 1991), altogether the evidence supports propositions 2 and 3, including findings from research on state depression specifically (e.g., Ingram, 1990).

There is decidedly mixed evidence for propositions 1 and 4 (Bower, 1992; Weary & Edwards, 1994). The first proposition--a selective exposure prediction--has received its primary support from several unpublished studies reported by Bower (1992). His student induced happiness or sadness in college students, and then unobtrusively measured the time they spent looking at pleasant and unpleasant photographic slides. Happy viewers spent more time on happy slides, while sad viewers spent more time dwelling on sad slides. From another unpublished investigation by a colleague, Bower reports that subjects temporarily depressed (by the Velten procedure) chose to look at "more serious, somber films than did subjects who were temporarily elated" (p. 20). Sad subjects also were more likely to choose sad nostalgic music, and reported an intent to spend more time on somber, serious and solitary activities in coming weeks.

The evidence for the fourth proposition, that of mood-state dependent retrieval (MDR), is quite mixed, and the effect is stronger for naturally-occurring memories than with experimental induction (e.g., recalling childhood events, rather than a list of experimentally-presented adjectives; Bower, 1992).

Of course, noxious mood states are not entirely advantageous. Depressed or anxious persons are often poor learners in general because their working memory is "filled" with ruminations associated with their emotions (Bower, 1992, p. 17). Depressives view both themselves and others more negatively (Weary & Edwards, 1994), and are more negatively judgmental of others who violate norms, but improve their mood after comparing themselves with others who feel as bad or worse than they do (p. 321). Segren (1998) outlines the typical pattern of personal relationships and family interactions of depressives (but, by the way, notes nothing about media habits). The depressive's social network is characterized by disrupted, dissatisfying interpersonal relationships, spousal relationships that are often negative in tone, hostile, manipulative, and critical, and dysfunctional parenting with an increased risk of depression in their children. Victims of trauma generally possess an urge to confide in others, which is typically not met receptively by others; in general, "people will derogate innocent victims in order to sustain beliefs in a just world" (Harber & Pennebaker, 1992, p. 364). Those experiencing chronic loneliness use a number of strategies to extinguish that dysphoric state, including ritualized and escapist TV viewing (Finn & Gorr, 1988; Perse & Rubin, 1990; Rubin, Perse, & Powell, 1985).

It is generally assumed that individuals do wish to escape a depressive state in the long run. The question is one of how depression may be escaped. Weary and Edwards (1994) present evidence that depressives actively seek out diagnostic social information for themselves and regarding others. Harber and Pennebaker (1992) present the view that "emotions remain active as long as the disparities that evolved them go unresolved" (p. 362; derived from Horowitz, 1986). Horowitz and Reidbord (1992) apply the elaborated stages of grief to negative states more generally in their consideration of reactions to life traumas. Here, "working through" the source of a negative mood state is essential before "completion" may be achieved (p. 349). Harber and Pennebaker (1994) review the efficacy of confronting trauma, and of narrative writing as active coping. They do not address the possible contributory impact of vicarious media experience in this coping process.

The literature on rumination is also informative. Rumination, defined as conscious, recurrent thoughts arising from some sort of discrepancy and continuing until resolution of that discrepancy, appears strongly related to depression (Martin & Tesser, 1996). The process of rumination is seen as a method of seeking "closure" (p. 5) or "resolution" (p. 6), or "working through" (p. 9) negative mood states such as depression, based on aspects of the elaboration likelihood model. Whether the individual seeks stimuli that distract from the rumination (e.g., a depressive choosing a comedy film; Petty, Jarvis, & Evans, 1996) or stimuli that facilitate the rumination process of "working through" (e.g., a depressive choosing sad content) is a prime determinant, under this perspective, of whether rumination will cease. Distraction simply interrupts rumination, which continues unabated after the distraction. A related phenomenon is explained by Martin and Tesser (1996)--"simulation," a cognitive method of coping, which involves the "cognitive construction of hypothetical scenarios or the reconstruction of real scenarios" (p. 5). One wonders whether vicarious simulation occurs while the depressed individual watches sad TV or filmic content.

Locke and Keltner (1993) make a similar study of distraction (avoidance) and comparison judgements (perhaps, "working through") among dysphorics exposed to art work. Distraction seems to improve sense of well-being when directed toward emotionally incongruent art, while forced comparison seems to improve sense of well-being when directed toward emotionally congruent (sad) art.

Similarly, in analyzing the process of coping with the negative state of stress, Burleson and Goldsmith (1998) note that distraction and denial are likely to be effective when the problematic circumstance is "comparatively trivial" (p. 257). For other cases, the individual's appraisal of the situation needs to change. The affective changes achieved through reappraisal are "more stable and functional than those achieved through distancing, avoidance, or denial" (p. 257). The authors note the value of interpersonal conversation as key in the reappraisal function. But since, as Harber and Pennebaker (1994) point out, others don't want to hear one's problems, does the stressed individual turn to the vicarious stimulation of TV or film?

### Mood Management and Media

Work by Zillmann (1982; 1988; Zillmann & Bryant, 1985) has provided the base for much research on mood management and media over the past decade, with his elaboration of a theory of affect-dependent stimulus arrangement, a hedonic-based set of propositions that emphasize attraction toward stimuli that will alleviate aversive states, and avoidance of noxious, aversive stimuli. Particularly, negative states are considered: "It is proposed that persons in acutely aversive states will display a preference for stimuli that exhibit minimal, if any, behavioral affinity with their experiential state," and "[I]t is proposed that persons in acutely aversive states will prefer hedonically positive stimuli over hedonically negative stimuli" (Zillmann & Bryant, 1985, p. 160).

But the most generally-stated version of "mood management" theory is that individuals use media experiences to achieve a desired emotional or mood state. Zillmann (1991a) outlines a three-factor theory of emotion, which consists of dispositional, excitatory, and experiential components. One of the more robust findings in this line of research is that of subjects seeking excitatory homeostasis--those in a state of boredom seek exciting fare, while those under conditions of stress select calming content (Bryant & Zillmann, 1984; Mundorf, Drew, Zillmann, & Weaver, 1990; Zillmann, 1988). Also deriving from the excitatory component, Zillmann's application of an excitation-transfer theory to attraction to suspense content in media is interesting to note (Zillmann, 1991b). He describes the situation as one in which empathetic distress, caused by the witnessing of victimization, initially brings about dysphoric excitation, but that this arousal is transferred to an euphoric response (and an enhanced euphoric response) so long as there is a happy resolution in the plot.

Zillmann and other researchers cite key psychological sources on associative memory, learning, and social cognition as the bases of their propositions. But competing psychological perspectives exist, as one may see in examining the mood congruence literature.

## Attraction toward Sad Content

The literaturederived from Zillmann's mood management theories generally fails to acknowledge the possibility of real attraction toward hedonically negative content--e.g., sad, depressing, anxiety-provoking, or even horrific content. Zillmann and Bryant (1985) report on one study in which subjects in a negative mood state shunned comedy. Instead of re-examining the theory, they rationalize the anomalous finding by reframing comedy as "hostile sitcom humor," i.e., not really hedonically positive after all.

Admittedly, much of the Zillmann and Zillmann-inspired work does provide strong evidence for the utility of exposure to hedonically positive content (Meadowcroft & Zillmann, 1987; Zillmann, 1991a; Zillmann, Hezel, & Medoff, 1980). Yet, filmic and television genres filled with negative valences consistently thrive (Cantor & Hoffner, 1990; Gehring, 1988; Grant, 1986; Schatz, 1981). This paradox was first explicated by Oliver (1993). She properly notes the classical roots of tragedy, and laments the slim attention paid by social scientists to such content in modern times. Using Mayer and Gaschke's notion of metaemotions, she posits that the experience of sadness itself may be perceived as gratifying (p. 319). Her work indicates that for films that are intended to be sad, respondents' sad reactions to those films are positively correlated with enjoyment of the films. This relationship is stronger among females. She has developed a "Sad-Film Scale" (SFS)[1], which relates positively to measures of empathy, femininity, and positive appraisals of sad emotions. The unidimensional scale is intended to measure enjoyment of sad films, and has not been extended to other functions.

## Uses and Gratifications

What other functions for exposure to sad content might there be? The classic uses and gratifications approach as outlined in Blumler and Katz's seminal work (1974) is broad enough to encompass many "active" processes motivated by self-aware needs (Lin, 1996). This perspective--that audience members are active, psychologically and emotionally motivated participants--has been applied variously from the beginning (Blumler & Katz, p. 22), as researchers have adapted notions to the question at hand. For example, a general overview of uses and gratifications by Lin (1993) presents five categories--informational guidance, interpersonal communication, parasocial interaction, entertainment, and diversion. Rubin and Rubin's (1989) study of VCR usership, however, employs more applied uses and gratifications dimensions--library storage, social interaction, freedom of choice, learning, and time shifting. Consistent with the idea that motives shift with the changing media environment, Rubin and Windahl (1986) extend the uses and gratifications approach by introducing "macroperspective" dependencies produced by audience-media-society relationships.

McGuire's (1974) benchmark attempt at a comprehensive typology of audience motives may be viewed as having three levels: (1) The major division of affective vs. cognitive motives, (2) each of these broken down into (a) motives directed toward maintaining one's equilibrium and (b) motives to grow or improve one's present state, and (3) each of these four categories broken down into four sets of relevant psychological theories. In the case of affective, equilibrium-maintaining motives, the four sets are: Tension-reduction theories, expressive theories, ego-defensive theories, and reinforcement theories.

## Mood Congruence and Message Impact

As articulated by McGuire (1974), none of these four categories would clearly include mood congruence theory; mood congruence could, however, constitute a fifth affective, equilibrium-maintaining category. Little research has looked at this novel viewing motive.

A small body of work exists that examines the role of mood congruence between an advertisement and the surrounding content. Early attempts (Kennedy, 1971; Soldow & Principe, 1981) suffer from methodological concerns, but later efforts (Gardner, 1994; Kaid, Chanslor, & Hovind, 1992; Kamins, Marks, & Skinner, 1991; Schumann & Thorson, 1990) generally support a mood "consistency effect." For example, Kamins et al. (1991) investigate the interaction between TV program-induced mood (happy vs. sad) and embedded commercial type. They find that sad TV show/sad commercial and happy TV show/happy commercial conditions produce higher ad evaluations[2] than do mixed conditions.

Kaid, Chanslor, and Hovind (1992), extending the work of Kamins et al., discuss the concept of closure as a potential way of explaining program effect on commercials. Discordant commercial content will, it is posited, interrupt the viewer's cognitive and affective trains, and will be dysphoric. Kaid et al. find support for their hypothesis that the more compatible to its program type a political commercial is judged to be, the more effective it is.

Gardner (1994), in a print ad manipulation, findsmarginal support for the "consistency effect." Subjects in a context-induced positive mood form more favorable brand attitudes upon exposure to an emotional ad than to an informational ad. Subjects in a context-induced negative mood form more favorable brand attitudes upon exposure to the informational than the emotional ad (p. 216).

In one of the few studies explicitly applying the mood congruence approach from cognitive psychology to actual media use, Reeves, Newhagen, Maibach, Basil, and Kurz (1991) dismiss the so-called "Pollyanna Principle" that assumes that individuals seek to maximize a state of pleasantness both in attending to the environment and in recalling events (p. 682). They fail to find support, however, for the mood congruence hypothesis in an experiment that embeds positive/negative PSAs in short (2-4 minute) positive/negative movie segments.

### The Possibility of "Wallowing"

Both the communication work on mood management and the advertising-based work on mood congruence is in general limited to experimental studies. Mood induction procedures range from the experimenter insulting the subject to the forced viewing of TV programming deemed by fiat to induce a given mood (a procedure criticized even by the researchers themselves; Reeves et al., 1991). Few studies have examined naturally-occurring mood states, and none have measured state depression.

From in-depth interviews, it becomes quickly apparent that not all individuals seek to immediately improve a negative mood state by watching comedies or other mood-incongruent hedonic content. Some report liking, or even needing, to "wallow"--to maintain a consistently negative or depressive mood state until they are "ready" to move on.

An individual-differences model is proposed, one which will accommodate both the mood-enhancement premise of the affect-dependent stimulus arrangement theory (Zillmann's "mood management") and predictions derivable from mood congruence literature. That is, many individuals under certain conditions will seek immediate and proximate relief from noxious states by the selection of stimuli with positive hedonic value, but others--perhaps many others under certain conditions--will seek mood-congruent stimuli, with a goal of continuation of the noxious state until such time as it is resolved, worked through, or extinguished. This proposal is to a large extent consistent with the affect-dependent stimulus arrangement perspective, in that an aggregate, moderate negative mood/comedy preference relationship could be found; but, this aggregate relationship may mask individual differences in the direction and strength of the relationship between negative mood valence and attraction toward stimuli with a negative valence.

The proposed model is also consistent with uses and gratifications, in the original, broad sense (McGuire, 1974). As noted earlier, "wallowing" could fit neatly in the third tier of McGuire's model, under "affective" and "equilibrium-maintaining."

## Questions and Predictions

The proposed model consists of the following research questions and hypotheses.

> **Research Question 1:** How prevalent are media behaviors associated with functional congruent affect-seeking while under negative conditions ("wallowing"), and are these behaviors unidimensional?
>
> **Research Question 2:** What are the characteristics of individuals who tend to "wallow," and which other behaviors are related to such activities?
>
> **Hypothesis 1:** A tendency toward wallowing will be positively related to (a) an attraction toward sad media content, (b) an avoidance of comedic content, and (c) a desire to maintain one's mood.
>
> **Hypothesis 2:** Those who tend to engage in behaviors associated with functional congruent affect-seeking while under negative conditions ("wallowing") will respond to state depression with stronger attraction to sad content, a stronger avoidance of comedy, and a greater tendency to functionally use sad content.

## Method

Data were collected via self-administered questionnaire from 86 undergraduate students enrolled in introductory communication courses at a large midwestern, urban university. Respondents received course credit for participation. The mean age is 23.5 years (range=16-47), 47% of respondents are female, 23% are nonwhite, and the median household income is in the $30,000-$39,999 range.

The instrument measured a wide variety of media orientations and preferences, only a subset of which is used in this analysis. Mood orientations were measured by 11-point Likert-type items that probed, "This evening, I hope to do something that will make me feel happier," and ". . . keep me in the same mood I'm in now." Transient depressive mood was tapped with the 102-item Depression Adjective Checklist (DACL; Lubin, 1965; Robinson, Shaver, & Wrightsman, 1991). Current frequency of depressive symptoms was measured with the 20-item Center for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977; Robinson, Shaver, & Wrightsman, 1991). For this study, internal consistency reliability coefficients are $\alpha$=.97 for DACL and $\alpha$=.91 for CESD.

Relevant trait constructs were also measured: the abbreviated 11-item Locus of Control Scale (Robinson, Shave, & Wrightsman, 1991; Rotter, 1966) achieved a marginal reliability of $\alpha$=.60; Smith's (1986; McIlwraith, Jacobvitz, Kubey, & Alexander, 1991) 19-item TV Addiction Scale was used, and the scale's two factors of addiction were confirmed with a principal components analysis with orthogonal rotation, the two subscales achieving reliabilities of $\alpha_1$=.79 and $\alpha_2$=.75. TV Addiction Subscale 1 measures the subject's "true" addiction to television (e.g., "When I'm watching TV, I feel like I can't stop," "I feel nervous when I can't watch TV."), while Subscale 2 taps guilt and depression about the subject's attraction to TV (e.g., "I feel guilty about how much TV I watch," "I feel depressed after watching TV.").

Genre preferences were measured in several ways. Eleven-point (0-10) Likert-type statements tapped agreement with the statements: "Sad dramas are my favorite type of movie or TV show," and "Comedies are my favorite type of movie or TV show." (Sad dramas and comedies were two of six genres asked about in the questionnaire.) In an open-choice section of the questionnaire, 16 fictitious TV programs were described in some detail[3], including comedy (four types–3 sitcom episodes, 1 movie), music videos, drama, sad drama, game shows, news, sports, and talk shows. Respondents were asked to select a total of two hours of content for hypothetical viewing "this evening." They were also asked to rate, on a 0-10 Likert-type scale, how stimulating each selection seemed. Respondent choices of sad drama and comedy, and their mean ratings for stimulation for sad drama and comedy, were utilized in this analysis.

Traditional uses and gratifications (Lin, 1996) questions were devised for six particular genres; this analysis used those for sad dramas only: "Sad dramas usually. . ." ". . . allow me to empathize with the characters," ". . . allow me to identify with the characters," ". . . make me forget my problems," ". . . make me feel more relaxed," ". . . make me feel more excited." Each item was measured along a 0-10 Likert-type scale.

Finally, eight 11-point Likert-type items were developed to tap the specific behaviors associated with functional congruent affect-seeking while under negative conditions--i.e., "wallowing." The precise item wordings may be seen in Table 1. The items were developed after substantial in-depth interviews with subjects from the same pool as those in the present study, and from the literatures reviewed earlier, notably those on rumination and depression (Martin & Tesser, 1996; Petty, Jarvis, & Evans). The items include statements intended to measure direct wallowing (remaining depressed while watching sad content), avoidance of dissonant "happy people" on TV when depressed, the cathartic utility of crying during a sad show, and pro-active approaches to using sad content to alleviate depression or rumination about problems (through mechanisms of comparison, cognitive stimulation, and identification/similarity).

Data were analyzed using principal components factor analysis, Pearson correlation analysis, one-way ANOVAs with Scheffe's post hoc test for multiple comparisons of means, and contingent correlation analysis using a z-test to compare key zero-order correlations.

## Results

Table 1 shows both the frequency of response and the results of a principal components factor analysis for the eight "wallowing" items, with oblique rotation to allow for intercorrelated factors. Using the latent root criterion, three factors emerge, with a substantial positive correlation between factors 1 and 3 ($r=.44$). In the frequencies in Table 1, we see that wallowing is reported by respondents in small but meaningful numbers. Nearly a quarter of respondents (23.3%) admit to wallowing, with about one in eight (12.8%) reporting that they "like" to wallow when depressed. More pro-active types of responses to congruent negative stimuli are reported more frequently--45.9% agree that "watching a TV program about other people's problems makes me feel my problems aren't so bad," and 36% "find it easier to accept my own problems when I see that people on TV have similar problems." More than a third (36%) report that they engage in cathartic crying: "I often feel better after crying during a sad movie or TV show."

The 3-factor solution explains 72.5% of the total variance of the eight items. Factor 1 is defined primarily by the more pro-active approaches to using sad content to alleviate concern over one's problems, and has therefore been labeled "Active Wallowing." Interestingly, all three functional mechanisms--comparison, cognitive stimulation, and identification/similarity--load together, indicating a multifaceted but complementary set of activities on the part of those high on this dimension. Factor 2 is clearly a "Cathartic Crying" factor, with the determining item measuring whether the respondent feels better after crying during a sad show. Factor 3 has been termed, "Passive Wallowing," in that its primary loaders are items that measure "pure," mood-maintaining wallowing and an avoidance of happy characters, with no indication of a motivation to use sad content to work through problems. Factor score coefficients were used to construct an index for each factor; corresponding internal consistency coefficients are $\alpha$=.85, .23, and .66 for the indexes for Factors 1, 2, and 3, respectively.

Research Question 1, asking about the prevalence of behaviors associated with functional congruent affect-seeking while under negative conditions ("wallowing") and their dimensionality, is given a pointed response. "Wallowing" occurs freely in a substantial minority of respondents, and is clearly not unidimensional.

Correlational analyses were used to begin the process of "profiling" wallowers. Table 2 presents zero-order correlation coefficients between each of the three factor indexes, and a number of measures--demographic indicators, mood orientations, genre preferences, and sad drama uses. Active Wallowing is not related to demographics, mood or mood orientation, or genre preferences. It is distinguished only by strong positive relationships with empathy and identification with characters in sad dramas, and a moderately strong positive relationship with obtaining excitement from sad dramas.

Cathartic Crying is significantly more prevalent among females, and among those not addicted to television. It is associated with an orientation toward improving one's mood "this evening," and with using sad dramas to relax. It is the only factor index to be related to a preference for the genre of sad drama.

The third factor index, Passive Wallowing, is a more prevalent pattern of reported behavior among younger respondents. It holds a strong, positive relationship with both subscales of TV addiction, both depression scales, and the index of external locus of control. Those who report greater Passive Wallowing also indicate that sad dramas allow them to forget their problems and to relax.

Research Question 2 poses the issue of characteristics of wallowers. From Tables 1 and 2, we have seen that Active Wallowers are indistinguishable in terms of demographics, mood state and other affective orientations, and are notable primarily for their pro-active use of sad media content to work through problems. Although they are no more likely to prefer sad content nor wish to maintain their mood, they also do not prefer comedy nor try to improve their mood. Cathartic Criers seem to be the ones most attracted to sad content, hoping to improve their mood, and doing so by crying. They best fit Oliver's (1993) model of the female fan of sad movies. Finally, Passive Wallowers are the classic wallowers envisioned at the outset of the study, as based on in-depth interviews. They are more depressed, are more fatalistic, are more attached to TV and feeling guilt over that attachment, and engage in escapist behaviors with regard to sad content. However, they do not seek to maintain their mood, as was expected, nor to choose sad content and eschew comedy, also as expected.

Indeed, Hypothesis 1, predicting that high wallowers would be attracted to sad content, avoid comedy, and desire to maintain their mood, is not supported by the evidence in Table 2. None of these measures are related to any wallowing factor, with the exception of Cathartic Criers preferring sad drama. Thus, we see that wallowing in and of itself is not isomorphic with attraction toward sad content (a la Oliver (1993)). It is rather a system of mechanisms of response to sad content. That is, Active Wallowers and Passive Wallowers do not in general seek sad content. . . but they use sad content in distinctive ways when they encounter it. Additionally, some individuals may be both Active and Passive Wallowers (the two factors are correlated r=.44).

Based on the unanticipated factor structure of the wallowing items, acceptable reliabilities for only the first and third factors, and their correlation, a median-split typology was created to further explore relationships between wallowing behaviors and mood orientations, genre preferences, and uses for sad dramas. Table 3 shows the result of this exploratory analysis, whereby both the Active Wallowing and Passive Wallowing indexes are subjected to median splits, and then a four-group typology is created. Twenty respondents are found to be below the median on both Active and Passive Wallowing; 24 are high on Active Wallowing and low on Passive Wallowing; 25 are high on Passive Wallowing and low on Active Wallowing; and, the smallest group, 15, are high on both types of wallowing. Of the sixteen mood orientations, genre preferences, and sad drama uses submitted to the four-group comparison, nine are significantly different across groups. The table provides means and F-tests for the nine significant comparisons; the six comparisons that are non-significant are listed at the bottom of the table. Significant post hoc Scheffe's tests are indicated with superscripts.

Complete non-wallowers are most likely to select comedy; Passive-only Wallowers are the most likely to reject comedy. However, the groups are not differentiated by choice of sad drama, nor by expressed preference for comedy or sad drama. We may see clarifications in our effort to "profile" wallowers: Non-wallowers select comedy, fail to empathize or identify with characters in sad dramas, are least likely to forget their problems or feel more excited with sad drama, and are the least addicted to TV. Active-only Wallowers are distinguished by the lowest level of transient depression (even lower than that for Non-wallowers), and have fairly strong empathy and identification with characters in sad dramas. Passive-only Wallowers most strongly reject comedy, have the highest level of transient depression of all groups, and have a moderately strong tendency to forget their problems with sad drama. Active+Passive Wallowers (i.e., those high on both dimensions) are distinguished by the highest level on a number of indicators--stimulation by sad dramas, empathy and identification with characters in sad dramas, forgetting their problems and feeling more excited with sad dramas, and both types of TV Addiction.

Hypothesis 2 predicts that those who tend to engage in behaviors associated with functional congruent affect-seeking while under negative conditions ("wallowing") would respond to state depression with stronger attraction to sad content, a stronger avoidance of comedy, and a greater tendency to functionally use sad content. Table 4 presents contingent correlational analyses that have used median splits on the three factor indexes to provide separate depression/response correlations for low and high wallowers. Z-test comparisons testing differences between correlations are reported with letter codes beneath the correlation coefficients. Both the transient depression (DACL) and current depressive behaviors (CESD) measures are reported.

There is no support for the notion that high wallowers are more likely to respond to depression with a preference for sad drama. Neither a choice of sad content nor an expression of sad drama as one's favorite content type is significantly more positively related to depression under a high-wallowing condition for any of the three wallowing factor indexes. On the contrary, we see that depression and citing sad drama as one's "favorite" are positive (and often significantly) related for all groups.

And we find that, contrary to expectations, among high Active Wallowers, depression and comedy choice are positively related--significantly more so than among low Active Wallowers (in fact, the relationship in this group is negative). But, with regard to Cathartic Crying, depression and comedy choice do relate as expected. High Cathartic Criers seem to respond to greater depression with greater rejection of comedy, while low Cathartic Criers seem to respond to greater depression with greater attraction toward comedy.

There is some support for the prediction that wallowers will be more likely than non-wallowers to respond to depression with greater functional use of sad content. This support is, understandably, dispersed among the three wallowing factors. And in fact, all three significant correlation differences for the low Cathartic Crying/high Cathartic Crying comparisons are in the opposite direction of that expected. That is, it seems that Cathartic Criers (vs. Non-criers) tend to respond to depression with lower empathy and identification with characters in sad content, and less excitement generated by sad content. For Active Wallowing and Passive Wallowing, however, the differences are in the hypothesized direction. High Active Wallowers seem to respond to depression with a greater tendency to forget their problems with sad content. High Passive Wallowers seem to respond to depression with more empathy and identification with characters in sad content, a greater tendency to forget their problems with sad dramas, and more excitement generated by sad dramas. On the whole, Table 4 provides mixed support for the propositions of Hypothesis 2.

## Discussion

The notion that many individuals choose to engage in functional congruent affect-seeking while under negative conditions (i.e., "wallow") is consistent with a several important theoretical perspectives. First, it fits neatly with the tenets of the mood congruence perspective. Second, the wallowing phenomenon fits within the general notion of the uses and gratifications perspective, but would necessitate reframing McGuire's typology to add congruency theories to the third level, under "affective," and "equilibrium maintaining" levels. Third, the wallowing phenomenon is consistent with the general, but not specific, articulation of Zillmann's mood-management perspective (1988): "[I]ndividuals consume media entertainment purposively in efforts to manage moods,"and "[I]ndividuals are capable of choosing materials for exposure that modify and regulate affective experiences and mood states in desirable ways"[4]

(p. 147). However, Zillmann's precise propositions derived from this general standpoint (p. 148), and the many operationalizations following from it have focussed entirely on positive-valence mood enhancement as the sole "desirable" outcome.

The model proposed for the wallowing phenomenon is only partly supported by this research. Again, wallowing is not the same as a preference for sad content. Rather, the construct of "wallowing" has been found to be multifaceted. The approach to sad content labeled "Active Wallowing" includes a strong "typical" uses and gratifications component, while that labeled "Passive Wallowing" denotes a preference to exert little control or effort, within a context of consistently sad emotions. While an Active Wallower appropriates and uses sad content for his/her purposes, a Passive Wallower escapes into the content as a method of avoiding cheerful, dissonant images. Atkin (1985) cleanly distinguishes between "uses" and "gratifications,"[5] the former being "transitory mental or emotional responses providing momentary satisfaction at an intrinsic level," and the latter, "anticipated postexposure application of the mediated experience to attaining pragmatic goals." Perhaps an Active Wallower is properly viewed as seeking "gratifications," while a Passive Wallower is seeking transitory "use." Future studies may be able to identify this distinction.

The remaining wallowing function, that dubbed "Cathartic Crying," is poorly tapped by the limited number of measures in this study (2 items loading; $\alpha$=.23). Its profile is close to that of fans of sad movies as measured by the Sad-Film Scale ("SFS"; Oliver, 1993), and therefore its role in future research on this topic should be re-evaluated. Deleting the two Cathartic Crying items and instead using the separate SFS might be prudent.

It must be acknowledged that the labels for the three factors are to some extent arbitrary[6], but this should not obscure the importance of the findings. Indeed, while it is true that the term "Active Wallowing" may at first blush appear oxymoronic, a dismissal of semantic complaints over the term will reveal the study's key discovery--that of functional approaches to exposure to sad media content that are not fully tapped by (a) a study of attraction to sad content (e.g., Oliver, 1993), or (b) traditional uses and gratifications research (e.g., Lin, 1996). It is clear that not all individuals are attracted to humor when in a negative or noxious mood state, as proposed by much of the research in communication to date (e.g., Zillmann, 1988).

This study, with its relatively small sample of college students, is only a first step in the elaboration of functional uses of media content with strong negative emotional valence. A next step would be to test propositions of active and passive wallowing in a sample from the general population. It seems that since significant wallowing activity is reported in a sample of youthful, generally healthy and active students, the phenomenon might be equally or more highly apparent in the population at large. And, a larger sample is needed. The median splits utilized in this analysis were in part an attempt to maintain a reasonable sample size; they are actually a more conservative test than one using top quartile/bottom quartile comparisons on a larger sample. Another execution might involve a sample of clinically depressed subjects. The possibility exists of using sad content for therapeutic purposes--but only with true "wallowers," for whom the mood congruence may facilitate functional uses that may result in emergence from depression, and/or better coping with the state. Future research may examine potential wallowing mechanisms, which might be related to simulation (Martin & Tesser, 1996) or active coping (Harber & Pennebaker, 1994). And, key components of the mood congruence perspective have not yet been applied, such as measures of the degree of cognitive processing, and recall.

Echoing Oliver's (1993) point that the attraction to tragedy is as old as recorded history, and her complaint that scant attention is paid to that attraction in today's scholarly literature, it might be noted that never have times been more troubled, while at the same time has so much emphasis been placed on hedonistic escape. Clarifying the role of negative media stimuli is perhaps one of our more important goals.

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Table 1. Factor Analysis of Approaches to Functional Congruent Affect-Seeking Behavior under Negative Conditions ("Wallowing")--Oblique Rotation.

| Variable | Loadings: Factor 1 "Active Wallowing" | Loadings: Factor 2 "Cathartic Crying" | Loadings: Factor 3 "Passive Wallowing" | Comm. | % Agree (n=86) |
|---|---|---|---|---|---|
| "Watching a TV program about other people's problems makes me feel my problems aren't so bad." | **.89** | -.13 | -.04 | .67 | 45.9% |
| "Watching something sad helps me mentally work through my problems." | **.87** | .28 | -.05 | .77 | 24.4% |
| "I find it easier to accept my own problems when I see that people on TV have similar problems." | **.87** | -.06 | .05 | .52 | 36.0% |
| "I often feel better after crying during a sad movie or TV show." | .19 | **.82** | .26 | .67 | 36.0% |
| "Watching a sad TV show makes me feel more depressed." | .26 | **-.62** | .33 | .79 | 36.0% |
| "When I'm depressed, I like to wallow in my sadness by watching something sad on TV." | -.01 | .15 | **.87** | .80 | 12.8% |
| "When I'm depressed, I can't stand to see happy people on TV." | -.08 | .00 | **.75** | .78 | 20.0% |
| "Watching a sad TV show lets me wallow in my problems." | .34 | -.27 | **.54** | .78 | 23.3% |
| Eigenvalue | 3.51 | 1.24 | 1.05 | | |
| % of total variance | 43.9% | 15.5% | 13.1% | | |
| Cronbach's alpha for resultant index | .85 | .23 | .66 | | |

Factor Correlation Matrix:

| | F1 | F2 | F3 |
|---|---|---|---|
| F1 | 1.0 | | |
| F2 | -.06 | 1.0 | |
| F3 | .44 | -.05 | 1.0 |

Table 2. Correlations between Wallowing Indexes and Demographics, Mood Orientations, Genre Preferences, and Sad Drama Uses.

| Variable | Factor 1 "Active Wallowing" | Factor 2 "Cathartic Crying" | Factor 3 "Passive Wallowing" |
|---|---|---|---|
| Household income | -.08 | -.13 | -.02 |
| Age | -.03 | .09 | -.24* |
| Gender (female) | .15 | .42** | .16 |
| TV Addiction Subscale 1 | .02 | -.25* | .33** |
| TV Addiction Subscale 2 | .00 | -.10 | .30** |
| DACL depression scale | -.16 | .10 | .53** |
| CESD depression scale | -.10 | .18 | .49** |
| Locus of control (external) | -.14 | .07 | .39** |
| Hopes to feel happier this evening | .04 | .23* | -.16 |
| Hopes to do something to keep same mood | .01 | -.09 | -.03 |
| Chooses sad drama content | .17 | .05 | .02 |
| Chooses comedy programming | .00 | -.16 | -.16 |
| Sad drama is favorite type | .17 | .31** | .14 |
| Comedy is favorite type | .04 | -.07 | -.03 |
| Finds sad drama stimulating | .17 | .17 | .03 |
| Finds comedy stimulating | .10 | -.06 | .02 |
| Empathizes with characters in sad dramas | .34** | .12 | .11 |
| Identifies with characters in sad dramas | .45** | .16 | .17 |
| Forgets problems with sad dramas | .12 | .03 | .31** |
| Relaxes with sad dramas | .09 | .27* | .21* |
| Feels more excited with sad dramas | .23* | .07 | .18 |

n=86
* - p<.05
** - p<.01

Table 3. ANOVA Comparisons of Active/Passive Wallowing Types.

**Significant differences are found for:**

| Variable | Low Active/ Low Passive Wallowing (n=20) | High Active/ Low Passive Wallowing (N=24) | Low Active/ High Passive Wallowing (n=25) | High Active/ High Passive Wallowing (N=15) | ANOVA (F, p) |
|---|---|---|---|---|---|
| Chooses comedy programming | $2.1^{a}$ | 1.7 | $0.8^{a}$ | 1.6 | $3.49_{(3,80)}$, .02 |
| Finds sad dramas stimulating | 4.6 | 4.7 | 4.0 | 7.0 | $2.66_{(3,73)}$, .05 |
| Empathizes with characters in sad dramas | $4.5^{a,b}$ | $7.2^{a}$ | 6.0 | $7.5^{b}$ | $5.00_{(3,80)}$, .003 |
| Identifies with characters in sad dramas | $3.1^{a,b,c}$ | $6.8^{a}$ | $5.7^{b}$ | $7.0^{c}$ | $9.08_{(3,80)}$, .0000 |
| Forgets problems w/ sad dramas | $2.8^{a}$ | 3.8 | 5.1 | $5.8^{a}$ | $4.12_{(3,80)}$, .009 |
| Feels more excited w/ sad dramas | $1.9^{a}$ | 3.4 | 3.3 | $4.3^{a}$ | $3.26_{(3,80)}$, .03 |
| DACL Depression Scale | 30.7 | $23.2^{a}$ | $41.0^{a}$ | 38.1 | $3.79_{(3,80)}$, .01 |
| TV Addiction Subscale 1 | $-0.41^{a}$ | -0.10 | 0.10 | $0.56^{a}$ | $3.06_{(3,75)}$, .03 |
| TV Addiction Subscale 2 | -0.31 | -0.29 | 0.24 | 0.42 | $2.74_{(3,75)}$, .05 |

NOTE: Entries within the same row that share a superscript are significantly different ($p<.05$) according to Scheffe's post hoc test for multiple comparisons.

**Nonsignificant differences are found for:**

Chooses sad drama content
Sad drama is favorite type
Comedy is favorite type
Relaxes w/ sad dramas
CESD Depression Scale
Locus of Control

Table 4. Contingent Correlation Analysis Comparing High and Low Wallowers.

| Variable | **"Active Wallowing"** | | | | **"Cathartic Crying"** | | | | **"Passive Wallowing"** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Low | | High | | Low | | High | | Low | | High | |
| | DACL | CESD | DACL | CESD | DACL | CESD | DACL | CESD | DACL | CESD | DACL | CESD |
| Chooses sad drama content | -03 | -07 | 01 | 01 | -09 | -11 | 01 | 01 | 01 | -07 | -07 | -03 |
| Chooses comedy programming | -13<br>a | -21<br>b | 25<br>a | 35*<br>b | 29<br>c | 15<br>d | -24<br>c | -13<br>d | 05 | -04 | 15 | 19 |
| Sad drama is favorite type | 34* | 38* | 20 | 23 | 24 | 20 | 25 | 39* | 33* | 36* | 19 | 25 |
| Comedy is favorite type | 11 | 17 | -05 | 14 | -06 | 04 | 14 | 29 | 19 | 26 | 00 | 11 |
| Empathizes with characters in sad dramas | 16 | 04 | 33* | 23 | 28 | 30*<br>e | 03 | -14<br>e | -16<br>f | -26<br>g | 37*<br>f | 42**<br>g |
| Identifies with characters in sad dramas | 31* | 22 | 26 | 20 | 29 | 36*<br>h | 10 | -04<br>h | -09<br>I | -09<br>j | 36*<br>I | 39*<br>j |
| Forgets problems w/ sad dramas | 11 | -01<br>k | 25 | 34*<br>k | 28 | 26 | 02 | -05 | -04 | -18<br>l | 11 | 26<br>l |
| Relaxes w/ sad dramas | 43** | 45** | 19 | 23 | 32* | 22 | 31* | 47** | 32* | 35* | 29 | 34* |
| Feels more excited w/ sad dramas | 01 | -04 | 24 | 29 | 21 | 24<br>m | -07 | -11<br>m | -13 | -20<br>n | 11 | 27<br>n |

n = 86
* - p<.05
** - p<.01

NOTE: All entries in the table are zero-order Pearson correlation coefficients. "Low" and "high" designate median-split groups on each factor score index. Correlations in a given row that share a letter notated beneath are significantly different at p<.05, via the z-test.

## Endnotes

1. The 15-item scale includes a number of items that have a strong uses and gratifications base, but are, ultimately, worded so that enjoyment or liking of sad films is the focal construct. Three items in particular are relevant to the research described here: 6. "One reason I like sad movies is because they help me to release my own sadness," 7. "I enjoy getting wrapped up in the lives of the characters in sad movies," and 14. "It feels good to cry when watching a sad movie."

2. Kamins et al. (1991) found significant interactions for the following: Valenced cognitions, attitude toward the ad, commercial effectiveness, liking for the commercial, and behavioral (i.e., buying) intentions. Strangely, these authors consider Bower's (19??) Mood Congruence model, yet make unsupported predictions from it that are clearly mood-enhancement in nature.

3. For example, the following listing represented sad drama:

> MOVIE--Drama: 2 hours. "All By Myself" (1992) A middle-aged housewife (Sally Field) faces life alone after surviving a car wreck in which her husband and two children are killed. She and her physical therapist (Caroline McWilliams) develop a supportive friendship.

4. A pair of propositions which, standing alone, seem derived directly from McGuire (1974).

5. A distinction that is rarely followed in uses and gratifications research.

6. The first name tried for the "Cathartic Crying" factor was the even more improbable "Lacrimal Purge."

# Identifying Structural Features of Radio:
# Orienting and Memory for Radio Messages

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# Orienting and Memory for Radio Messages

## Abstract

This paper examines the ability of nine different structural and content features of radio to elicit orienting responses from radio listeners. It further tests the effect of the orienting response on listeners' memory for information presented immediately following the orienting eliciting feature. Results show that eight of the nine features elicit orienting responses. On average, memory is better for information presented following those features than it is for information presented before the features.

# Identifying Structural Features of Radio:

## Orienting and Memory for Radio Messages

Are there features of broadcast radio which can affect how audio messages are cognitively processed by listeners? Previous research has demonstrated that structural features of video messages can be manipulated by producers to influence audience members' cognitive processing (Anderson, 1983; Basil, 1994; Calvert, Huston, Watkins & Wright, 1982; Geiger & Reeves, 1993; Grimes, 1990; Gunter, 1987; Lang, Dhillon & Dong, 1995) but results of this work have not been extended to other media such as radio. Radio producers have acknowledged the important role structural features such as sound effects and vocal delivery play in capturing audience attention (Keith, 1990; Siegal, 1992). However, specific investigations into which structural features influence cognitive processing of radio messages have not been conducted. The goal of this study is to identify possible structural features of radio messages and examine their influence on the processing of message information.

Over the last 20 years research has attempted to identify the structural or formal features of television which alter television viewers' attention to and memory for television messages. This work began in the seventies with studies examining what aspects of children's television caused children to look at the TV (Anderson, Levin, & Lorch, 1977, Anderson, Lorch, Field, & Sanders, 1981, Anderson, 1983). It was suggested (Singer 1980) that many of the formal features of television identified in this research were actually eliciting orienting responses from child viewers.

An orienting response (Lynn, 1966) is a reflexive attention response characterized by a group of behavioral and physiological responses including looking toward the stimulus that elicited the response, a slowing of the heart rate, and an increase in skin conductance.

Further research determined that many structural features of television, including cuts (Lang, Geiger, Strickwerda, & Sumner, 1993), negative video (Lang, Newhagen, & Reeves, 1998), video-graphics (Thorson & Lang, 1992), and movement (Lang, 1990, Reeves, Thorson, Rothschild, McDonald, Hirsch, & Goldstein, 1985) all elicited orienting in attentive television viewers.

What was not clear, was whether the increase in attention elicited by these structural features increased or decreased memory for the messages (Anderson, 1983; Singer, 1980). One view was that these momentary increases in attention would automatically increase memory for the messages. The other view was that these involuntary responses would distract viewers from the message content and focus their attention instead on the peripheral or structural aspects of the message. Research investigating this question suggests that both things can happen depending on how hard the viewer is working to learn the content contained in the message.

For example, Thorson and Lang (1992) showed that when television viewers were watching easy or familiar content, memory for that content improved immediately following a video-graphic which elicited an orienting response. However, when the content was difficult or unfamiliar, memory decreased following the video-graphic. Similarly, Lang et al. (1993) demonstrated that when the content on either side of a cut was related, memory following the cut increased. However, when the content on either side of the cut was unrelated, memory decreased. Similar results have been found when looking at memory for television messages as a function of how many structural features they contain. If the content of a message is not demanding, then viewers' memory for that content improves when the message contains many structural features and elicits many orienting responses. However, if the message content is demanding, then memory for the content of the message is lower if there are a lot of structural features in the message (Lang, Bolls, Potter, & Kawahara, in press).

To date, this model has been applied almost exclusively to studying television messages. Very little research has been done to determine if these same effects might be found in media other than television. Potter, Bolls, and Lang (1997) conducted a study to determine if radio listeners exhibited orienting responses to structural features of radio. In that study, several radio structural features were combined to determine if listeners exhibited cardiac orienting responses to these combined structural features. The answer was yes.

This paper extends that work by examining individually the specific structural features, which were combined in the previous study, to determine if they elicit orienting responses in radio listeners. Nine different structural features and sound effects were combined in the previous study to test the basic orienting hypotheses. The nine features are voice changes, commercial onsets, silence, jingle onsets, laser sound effects, a channel changing sound effect, a phone ringing, a funny voice, and a sexual word.

It is expected that at least some of these structural and content features of radio will elicit orienting in radio listeners. If this occurs, then listeners should exhibit a decrease in heart rate and an increase in skin conductance following the structural feature of interest. Thus:

H1: Heart rate should decrease immediately following the onset of an identified structural or content feature.

H2: Skin conductance should increase immediately following the onset of an identified structural or content feature.

This paper goes on to test the effects of these sound effects on radio listeners' memory for the content occurring immediately before and immediately after the various structural and content features. Given the nature of the stimulus (light radio content taped directly off-air) it is expected that listeners will not find the content to be demanding. If that is the case, then the orienting responses should increase memory for information immediately following the identified structural feature. This leads to:

H3: Information presented immediately after the onset of an identified structural or content feature will be recognized better than information presented immediately before such a feature.

H4: Information presented immediately after the onset of an identified structural or content feature will be recognized faster than information presented immediately before such a feature.

## Methodology

### Subjects

Subjects were college students enrolled in one of three telecommunications courses at a major Midwest university. Each subject received course credit for their participation. Thirty-eight subjects participated in the experimental protocol.

### Stimulus Preparation and Description

The experimental design called for the creation of audio stimuli containing elements believed to cause orienting responses in radio listeners. Both structural and content elements were chosen. The structural features chosen for investigation were: laser sound effects, voice changes (the onset of a different speaker), commercial onsets, and silence. The more content oriented features chosen were a funny voice, a jingle onset, a telephone ringing, the sound of someone changing stations, and the presence of sexual content.

The final twelve minute stimulus tape included seven audio messages. Six of these messages were recorded off the air in a Midwest college town. The seventh message was a rock and roll song recorded directly from compact disc.

Four tape orders were constructed using the seven messages. All of the structural features of interest occurred during the six non-song messages. The song was the fourth element in all four tape orders, with the six broadcast messages being placed in different logical orders around it. No broadcast message appeared exclusively before or exclusively after the song. Also no two broadcast messages were adjacent to each other in more than one tape order.

The tape orders were transferred onto the audio track of a VHS videotape which had been blacked and time coded. This allowed the exact location of the features to be determined.

### Dependent Variables

The dependent variables in this study are heart rate, skin conductance, and recognition accuracy. Heart rate and skin conductance were used to indicate if orienting occurred. If orienting occurs there should be a significant deceleration of the heart occurring in the six seconds following onset of the structural feature (Lang, 1990) and a significant increase in skin conductance (Lynn, 1966) immediately following the feature. Memory for the content of the messages was measured using a forced choice reaction time recognition test. This means both percent accuracy of recognition and speed of recognition can be ascertained.

### Experimental Procedure

There were four experimenters who conducted this study; each followed the same experimental protocol designed to obtain data on human reactions to and memory for television, computer media, and radio. The radio protocol reported in this section was always the second set of procedures subjects participated in.

Prior to the subjects arrival, a series of safety checks was conducted on the data collection equipment to ensure the safety of the subjects. Only one subject participated in the experiment at a time. Each was greeted by the experimenter, who then explained that the purpose of the study was to gain a better understanding of how human beings react to the media, specifically television and computers. After obtaining informed consent, Beckman AG/AGCL electrodes were applied to the subject's arms and hands to measure heart rate and skin conductance.

The first set of procedures involved either watching a set of television messages or interacting with a computer monitor and keyboard. After these procedures were completed, subjects were told that the researcher needed to take about ten minutes to do some calculations on the data which had just been collected. The researcher told the subject that, in the meantime, radio messages would be played for them to listen to.

After the radio messages were played, subjects participated in other portions of the protocol dealing with the television and computer interactions. When these were completed, subjects were given a recognition memory test for the radio messages. This test consisted of listening to 3-second portions of audio messages. The subjects were told that some of the portions were from messages they had heard previously, and others were not. Using a joystick held in their dominant hand, subjects were instructed to answer as soon as they knew whether or not they had heard the portion earlier in the experiment.

After the entire protocol was completed, subjects were debriefed, thanked, and dismissed.

## Apparatus

Heart rate and skin conductance were collected from the subjects as they listened to the radio stimulus. The stimulus tape was played by a Panasonic videocassette recorder through the speakers of a 19-in. television placed approximately 5 feet from the subject. The videocassette recorder, experimenter, and physiological recording equipment were separated from the subject by an 8-foot wooden wall.

The lab was controlled by a 386 computer with a LabMaster AD/DA board installed. Coulbourne physiological equipment was used in the collection of data. Heart rate was measured as the milliseconds between heart beats and was analyzed as the average heart rate per second. Skin conductance data were collected as an analog signal sampling at 10 times per second.

Recognition responses were recorded using a Sidewinder joystick. Subjects would press the "yes" button on the joystick if they had heard the audio segment before, and the "no" button if they had not. Recognition results were coded for accuracy and response latency on a 386 computer using the Slimy Recognition/Reaction Time program (Newhagen, 1993).

## Analyses

The heart rate data were analyzed using a mixed N (Repetitions) X 7 (Seconds) X 4 (Order) ANOVA. The within subjects factors were repetitions (with N levels representing the number of times an individual feature occurred) and Seconds (with 7 levels, representing 1 second prior and 6 seconds following feature onset). The number of repetitions of the feature varies from 1 to 5 depending on which feature is being analyzed. The stimulus tape included 5 voice changes, 2 examples of silence, 2 production effects, 2 commercial onsets, 2 jingles, 1 channel change, 1 phone ring, 1 sexual content, and 1 funny voice. The between subject factors was Order (with four levels representing the presentation orders). Missing heart rate data were re-coded to the mean heart rate across subjects for that second. 8 values out of 6840 were missing, resulting in 0.12% of the heart rate data being re-coded to the mean.

The skin conductance analysis was done on the change scores; that is, the extent to which skin conductance levels changed after the onset of the structural features (Dawson, Schell, & Filion, 1990). The data were analyzed using a N (Repetitions) X 4 (Seconds)X 4 (Order) ANOVA. The within and between subjects factors for this analysis were the same as above except that the Seconds factor had 4 levels, representing the change scores for the 4 seconds following the feature onset. Due to researcher error during data collection, skin conductance data from three subjects were missing. Therefore, n=35 for the skin conductance analysis.

The recognition data were analyzed using an N (Repetitions) X 2 (Position) X 4 (Order) ANOVA. The within and between subjects factors for this analysis were the same as above except for the Position within subjects factor which had two levels, before and after. These levels corresponded to whether the 3-second audio portion being tested occurred before or after the structural feature.

### Power

As discussed above, the number of repetitions for the individual structural features varies from 1 to 5. As a result, the power to detect effects varies. Those analyses with four or five repetitions are much more powerful than those with a single repetition. Because the goal is to begin to explore which structural features may elicit orienting and because for several of these features power is quite low, the .10 level of alpha has been designated as significant for this study.

## Results

### Hypothesis 1

This hypothesis predicted that heart rate should decrease immediately following the onset of an identified structural or content feature. Using trend analysis, significant heart rate decelerations were found for voice changes (F(1,29) = 5.244, p<.066), commercial onsets (F(1,29)=8.01, p<.008), jingle onset (F(1,29)=3.03, p<.093), silence (F(1,29)=3.24, p<.082), production effects (F(1,29)=3.24, p<.018), phone ringing (F(1,29)=2.86, p<.10), funny voice (F(1,29)=4.973, p<.033) and sexual content (F(1,29)=10.05, p<.003. A significant deceleratory trend was not found for the station change sound effect. Thus, eight of the nine features tested showed significant cardiac deceleration following onset. Combining the features in an overall analysis also yielded a significant quadratic heart rate deceleration ( F (1,29)=13.32, p<.001). This combined effect is shown in Figure 1.

### Hypothesis 2

This hypothesis predicted that skin conductance should increase immediately following the onset of an identified structural or content feature. This hypothesis was not supported for any of the individual features, though the means are in the expected direction for six of the nine effects. When all the features are combined, there is a significant increase in skin conductance (F(3,81)=2.77, p<.047, epsilon squared = .06) which is shown in Figure 2.

### Hypothesis 3

This hypothesis predicted that information presented immediately after the onset of an identified structural or content feature will be recognized better than information presented immediately before such a feature. The results of this analysis are shown in Table 1. Of the nine features tested three showed significant effects in the predicted direction: voice change (F(1,34)=14.61, p<.001), funny voice (F(1,34)=3.86, p<.058), and sexual content (F(1,34)=4.39, p<.044). For all of these, recognition was better following the feature than it was before the feature. Commercial onsets also elicited a significant effect but in the opposite direction from that predicted (F(1,34)=5.11, p<.030) with 54% recognition for information presented after the commercial compared to 77% before. The remaining five features all had means in the correct direction but did not reach significance. When combined, however, the overall effect was significant (F(1,34) = 9.15, p<.005), with listeners recognizing 71% of the content before a feature compared to 77% after.

### Hypothesis 4

This hypothesis predicted that listeners would reach their recognition decisions faster for information presented following a feature than they would for information presented before a feature. The results of this analysis are presented in Table 2. This hypothesis was supported for only two of the features, voice change (F(1,34)=6.48, p<.016) and jingle onset (F(1,34)=8.85, p<.005). In both of these instances, latency to recognition was faster for information presented following the feature than it was for information presented before the feature. For two other features, commercial onset (F(1,34)=73.81, p<.001) and station change (F(1,34)=5.12, p<.030) this effect was significant but in the wrong direction. For the remaining five features the effect was not significant. The overall combined effect was also not significant (F<1).

## Discussion

Overall the results of this study suggest that radio listeners, like TV viewers, have

405

orienting responses to structural and content features of the medium. Further, there is evidence that these orienting responses do increase memory for the information that follows them.

First, it seems to be fairly clear that radio listeners have orienting responses to structural features. Eight of the nine features tested in this study showed significant cardiac orienting responses (i.e., a significant quadratic deceleration of heart rate following the structural features). While the skin conductance data did not yield significant results for the individual tests, the overall combined test did show a significant increase in skin conductance.

The effects of those orienting responses on memory is, not surprisingly, less clear cut. Overall, memory is somewhat better for information occurring after the feature than it is for information occurring before the feature, as predicted. The main exception occurs for commercial onsets and several possible explanations might be offered for this. First, as discussed previously, it has been demonstrated (Lang, Geiger, Strickwerda, & Sumner, 1993) that when processing television messages, memory for information following a cut decreases if the information is semantically unrelated to what was occurring before the cut. This lack of relation is exactly the condition tested by commercial onsets in radio. The beginning of a commercial usually introduces completely new and unrelated information to the listening audience. Thus, following the onset of a completely unrelated message, memory may decline as it does in television. A second possibility is that listeners may be actively avoiding paying attention to commercials.

The latency results do not strongly support the notion that information presented immediately following a structural feature is somehow more available than information presented before the feature. However, this may partially be an effect of the design. For example, for voice changes–which occurred within a single message with related content and for which there are several repetitions–there is a significant effect in the predicted direction. It may be that there are too many uncontrolled content factors and insufficient power in this design to see latency effects consistently across these features. It is probably too early to conclude that no such effect exists.

Practically, it seems safe to conclude that both structural and content features in radio do elicit orienting and that when content is not very demanding those orienting responses may increase memory for information occurring immediately following the feature. Further, even a fairly innocuous and common feature like voice change appears to consistently elicit both orienting and improved memory. This may mean that, despite the low cost, using only one announcer or anchor to deliver a radio advertisement or news story may be a poor production strategy. Results from this study suggests even a very small production effect (like the addition of a second voice) appears to significantly increase listeners' memory. This study also suggests that the addition of sound effects (phones ringing and stations changing) also appear to increase attention and memory. Finally things which are distinctions, like funny voices or sexual words, also appear to elicit orienting and improve memory for the content of the message.

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Table 1: Mean recognition accuracy for information presented before and after the structural feature.

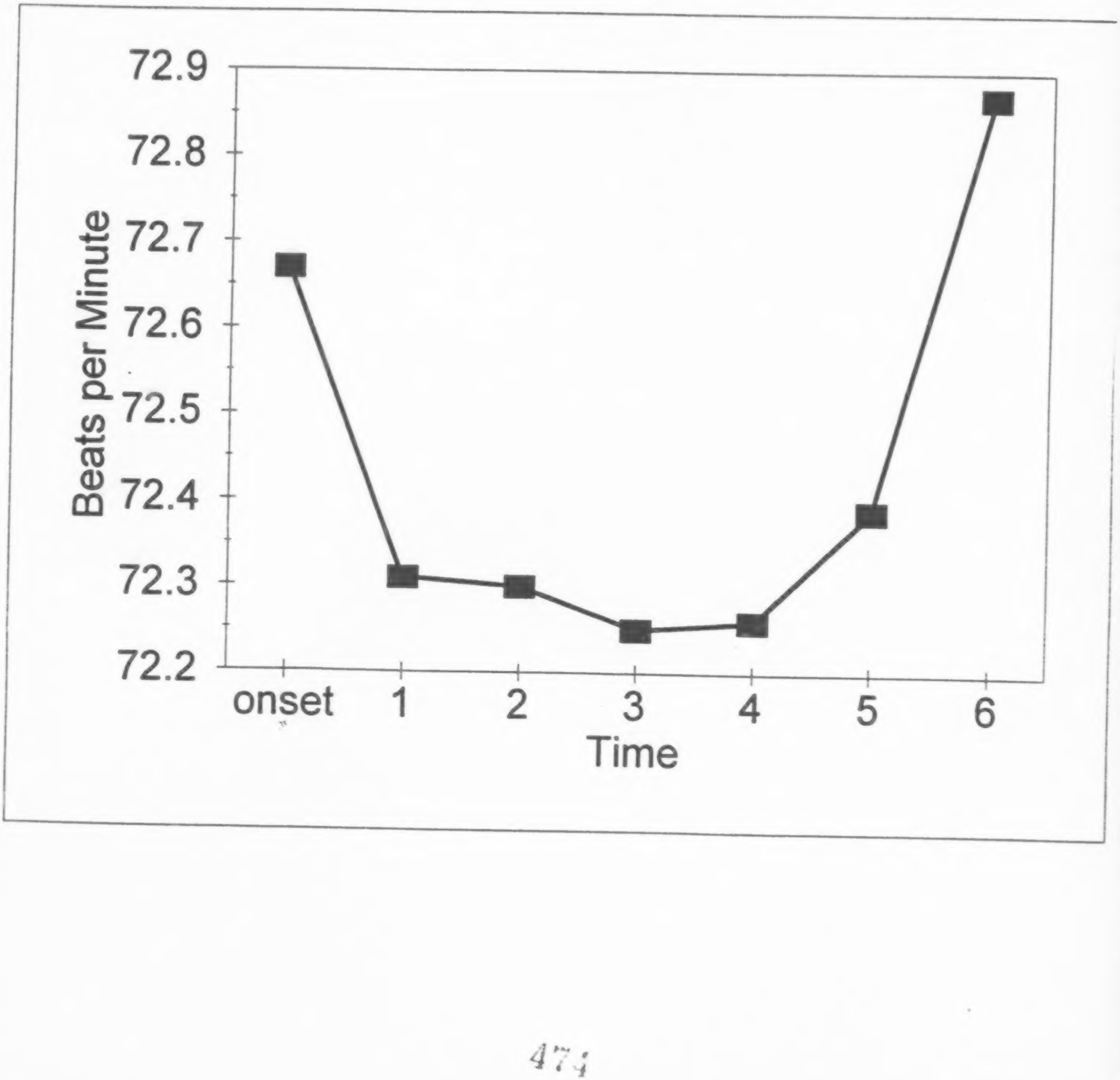
| Structural Feature | Before | After | F | df | p |
|---|---|---|---|---|---|
| Funny Voice | .771 | .914 | 3.86 | 1,34 | .058 |
| Station change | .514 | .600 | <1 | 1,34 | .373 |
| Commercial onset | .771 | .543 | 5.11 | 1,34 | .030 |
| Jingle onset | .715 | .786 | 1.98 | 1,34 | .170 |
| Phone ringing | .943 | .886 | <1 | 1,34 | .422 |
| Laser effect | .629 | .714 | 1.21 | 1,34 | .280 |
| Sexual content | .857 | .971 | 4.39 | 1,34 | .044 |
| Silence | .672 | .729 | 2.32 | 1,34 | .137 |
| Voice change | .552 | .762 | 14.61 | 1,34 | .001 |
| All | .706 | .771 | 9.15 | 1,34 | .005 |

Table 2: Mean latency to reaction time for information presented before and after the structural feature.

| Structural Feature | Before | After | F | df | p |
|---|---|---|---|---|---|
| Funny Voice | 3162 | 3128 | <1 | 1,34 | .865 |
| Station change | 3037 | 3429 | 5.12 | 1,34 | .030 |
| Commercial onset | 2408 | 4153 | 73.81 | 1,34 | .000 |
| Jingle onset | 2955 | 2533 | 8.85 | 1,34 | .005 |
| Phone ringing | 3013 | 2877 | 1.08 | 1,34 | .307 |
| Laser effect | 3277 | 3106 | 1.01 | 1,34 | .322 |
| Sexual content | 2678 | 2745 | <1 | 1,34 | .664 |
| Silence | 2978 | 3178 | .72 | 1,34 | .402 |
| Voice change | 3284 | 3049 | 6.48 | 1,34 | .016 |
| | | | | | |
| All | 3041 | 3068 | <1 | 1,34 | .542 |

Figure 1: Average heart rate change over time following a structural or content feature

473



72.9
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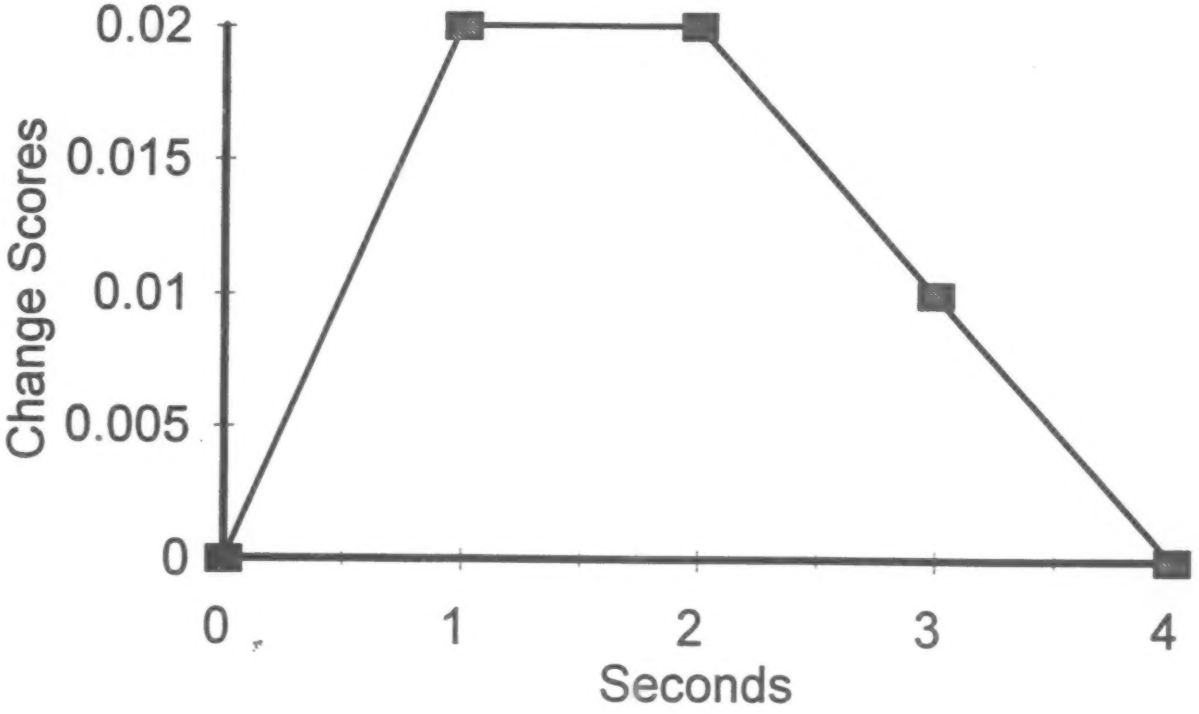
Figure 2: Average Skin Conductance over time following a structural or content feature


0.02
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# Video Violence: Desensitization and Excitation Effects on Learning

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# Video Violence: Desensitization and Excitation Effects on Learning

## Abstract

An experiment tested desensitization and excitation effects of video violence on learning. In accordance with excitation theory, it was hypothesized that viewers exposed to violence will have poorer recall of events compared to viewers not exposed. Desensitization theory led to the proposition that viewers desensitized to violence and exposed to a violent stimulus will have better recall of events compared to non-desensitized viewers. Results indicate support of desensitization theory for information presented after violent stimuli.

# Video Violence: Desensitization and Excitation Effects on Learning

## INTRODUCTION

Television is one of the most influential forces in people's lives. Since no one can acquire all their knowledge from direct experience, people often turn to the media to provide them with information about events, people, or even products. It is in this manner that people learn to orient themselves in the world in which they live (Bandura, 1994). While the primary goal of certain media, such as newscasts and commercials, is to inform and educate the public, past studies have shown that people recall very little of what they see on television (Katz, Adoni & Parness, 1977). Broadcasters of informative programming need to be aware of factors that may enhance or inhibit the acquisition of knowledge by the audience. The purpose of the present study is to investigate the impact of one type of media content, television violence (i.e., severe aggression; that is, acts that could potentially cause physical injury or death to an individual (Royal Commission on Violence, 1976)), on one's ability to remember the information viewed.

There is a general belief that television violence has an impact on its audience (Bandura, Ross & Ross, 1963; Berkowitz & Rawlings, 1963; U.S. Surgeon General's Scientific Advisory Committee, 1972; Wharton & Mandell, 1985; Gadow & Sprafkin, 1989; Singer, 1989; Gerbner, 1992; Comstock & Strasburger, 1993; Gerbner, Morgan, & Signorielli, 1994; Committee on Communications, 1995). Viewers are constantly inundated with violence almost every time they turn on the television or see a movie. Over 1,000 studies have demonstrated a causal connection between media violence and aggressive behavior in children (U.S. Surgeon General's Scientific Advisory Committee, 1972; U.S. Department of Health and Human Services 1982; Comstock, 1989; Committee on Communications, 1995). In addition, exposure to violent content can give rise to hostile or violent thoughts (Jo & Berkowitz, 1994). With the pervasiveness of violence in society there is cause for continual reexamination of its effects on children and adults. The present study focuses on another possible result of television violence: the effects of viewing violent content on viewers' recall and recognition of factual information presented before and after violent scenes.

## The Process of Memory Recall

To facilitate understanding of recall, an outline of how information is stored in memory and then recalled is useful. Theories suggest there are three steps that must be followed to recall previously presented information: encoding, storage, and retrieval. Encoding occurs when a person views information that is then processed and understood in terms of conceptual representations in the short-term memory. Since people cannot take in everything they see at once, the stimuli to which the person pays attention will be primarily encoded (Kellermann, 1985).

Storage occurs when information accumulated in short-term memory is transferred into long-term memory. Again, certain factors affect what information will be stored in long-term memory. For example, if a person mentally rehearses a stimulus to which they have been exposed, it is more likely that information will be transferred to long-term memory (Kellermann, 1985).

Finally, retrieval is the process of accessing information that has been stored. However, just because information has been encoded and stored does not mean that it can be retrieved on demand. The broader the category of mental information to be searched, the more difficult it will be for the person to retrieve, and therefore recall, specific information (Kellermann, 1985).

In understanding the effect of violence on viewers' memories, the concept of recall can be divided into two subcategories: aided and unaided. Unaided recall is the ability to recall information without any outside suggestion. Unaided recall is frequently operationalized by asking respondents to write down everything they remember about a stimulus (Kellermann, 1985; Scott & Goff, 1988). On the other hand, aided or cued recall is assisted by outside suggestion. It is often operationalized by fill-in-the-blank and multiple choice questions (Loftus & Burns, 1982; Scott & Goff, 1988). . While both questions cue the respondent's memory, multiple choice queries actually measure recognition rather than recall because the respondent is forced to choose the correct answer from a list of possible choices (Loftus & Burns, 1982; Mundorf, Drew, Zillmann, & Weaver, 1990).

Warrington & Weiskrantz (1970) suggested that aided recall might be easier than unaided recall. Unaided recall requires a much larger category of information to be searched, basically the list of all possible answers. Aided recall, on the other hand, narrows significantly the category of mental information to be searched. Moreover, other researchers (Loftus & Burns, 1982; Prasad & Smith, 1994) have suggested that recognition may be easier than either type of recall. With memory recognition measures the answer is one of the multiple choices; the individual need only direct his/her cognitive facilities to those specific possible answers. Consequently, most researchers (Warrington & Weiskrantz, 1970; Loftus & Burns, 1982; Kellermann, 1985; Prasad & Smith, 1994) agree that unaided recall is more difficult than aided recall and both types of recall are more difficult than recognition.

## Excitation Theory

One of the primary theories that has been used to predict the effects of media violence on recall is excitation theory (Scott & Goff, 1988; Newhagen & Reeves 1992; Prasad & Smith, 1994). Excitation theory states that when viewers view a compelling video, such as a violent film clip, they become physiologically aroused. When the compelling video terminates, the internal state of arousal remains. The remaining arousal is then carried over into subsequent situations experienced by viewers (Cantor, Mody, & Zillmann, 1974).

It is argued that the viewers' state of arousal leads to enhanced cognitive performance because arousal tends to activate a "fight or flight" mechanism. Even though viewers may know that what they see on television is not an actual threat, the subconscious is unable to distinguish it as such for a few moments[1]. Consequently, the channels for acquiring information are opened to deal with this threat. As a result, viewers' recall or recognition of factual details, after being presented a violent video, will be enhanced compared to recall or recognition of information presented before the violence.

Scott and Goff (1988) demonstrated that recall of information presented immediately after a violent image is significantly poorer than information presented two minutes after the violence[2]. Scott and Goff hypothesized that viewers aroused by a violent video may be unable for a short time to attend to the information presented after the video. Viewers will still be focused on the violence just witnessed, and therefore, distracted from the new information; however, after the two-minute interval, viewers will still be aroused, but no longer distracted by the violent stimulus. Consequently, recall for factual detail will be enhanced until the subjects' arousal eventually wears off. In addition, subsequently presented information will be recalled or recognized better among aroused viewers than among those not physiologically aroused (Newhagen & Reeves, 1992).

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[1] Shapiro and Lang (1991) argue that individuals use higher-order processes to quickly determine whether a stimulus is real or not. If they decide it is fictional, physiological arousal may be inhibited. They suggest three possible responses to actual and mediated events. The orienting response calls attention to the stimulus and causes the individual to gather information about the stimulus. The startle response occurs when a stimulus suddenly appears. Avoidance-like behaviors and the attenuation of incoming information about the stimulus characterize this response. Finally, the defensive response is a reaction to very noxious stimuli. It, too, stops information intake and results in true avoidance behavior.

[2] Overall recall of information after the violence is still greater than overall recall of information before the violence.

Under excitation theory, exposure to a violent video also decreases recall for factual details occurring before the video. Newhagen and Reeves (1992) argue that arousal, which results from the presentation of a violent video, interferes with the rehearsal necessary to store previously viewed factual information in the viewers' memory. Consequently, a subject who has been exposed to a violent stimulus will have significantly poorer recall of details occurring before the stimulus compared to a subject who has not been exposed to the stimulus.

Moreover, Loftus and Burns (1982) demonstrated that for events occurring immediately (i.e., within four seconds) prior to the violent incident, memory was drastically poorer for subjects who had been exposed to a violent stimulus compared to subjects not exposed to the stimulus. In the Loftus and Burns study, viewers saw a tape of a bank robbery. In the experimental film (i.e., with violent stimuli), the bank robbers shot a child in the face. In the control film (i.e., no violent stimuli), the film cuts back to the interior of the bank. In both films, approximately four seconds before the critical moment (either the child is shot or the film cuts to the bank interior) a boy wearing a football jersey with a number on the back runs into the scene. The shirt is visible for approximately two seconds. When subjects in both groups were later asked, via cued recall, the number on the boy's shirt, only 4% of the subjects exposed to the violent film could recall the number, while 27.9% of subjects exposed to the nonviolent film were able to give the correct number.

A second experiment was conducted to see if similar results were obtained using a forced-choice recognition design (i.e., multiple choice). While more subjects exposed to the violent stimulus were able to choose the correct number (28%), this percent was still significantly lower than the number of subjects in the nonviolent condition who chose the correct number (55%). Thus, the results obtained in these studies, where recall and recognition were inhibited for factual detail occurring before a violent stimulus, support excitation theory.

Nevertheless, other researchers have obtained results that appear contrary to excitation theory. Mundorf and his colleagues (1990) found that subjects exposed to violent content had significantly poorer recognition for factual detail occurring after the stimulus compared to subjects not exposed to violent stimulus. To explain these results, Mundorf et al. suggest that when subjects are exposed to violent stimuli, they become preoccupied with their aroused emotional state. Focusing on this state and seeking ways to reduce their arousal, subjects pay little attention to subsequent factual detail. As with excitation theory, the physiological arousal eventually wears off and subjects' ability to acquire information returns to normal. In fact, excitation theory and the proposal of Mundorf et al. appear quite similar except Mundorf's proposal does not have a period of enhanced recall after the initial impairment, which the excitation theory does. Rather, under the preoccupation proposal, impairment remains throughout the aroused state.

### Desensitization Theory

Desensitization theory states that individuals who watch large amounts of violence become less sensitive to future violent content than individuals who watch less violence (Comstock, 1989). Psychologists have demonstrated that people gradually become less physiologically and emotionally aroused as they view more violence. For example, Cline, Croft, and Courrier (1973) showed a violent television portrayal to children who were heavy television viewers and those who were not heavy viewers. Cline and colleagues found that children who watched a lot of television (arguably a violent medium) became less physiologically aroused when shown the violent clip compared to the children who were not heavy viewers.

In another study, Thomas, Horton, Lippincott, and Drabman (1977) showed different film clips to two groups of 8-10 year-old children. One clip was of a violent police drama. The other was of a volleyball game. Each group was then shown a television clip of real-life violence. Thomas et. al found that the children who had viewed the violent police drama were significantly less aroused by the subsequent violent clip compared to the children who had viewed the non-violent volleyball game. Thomas and her colleagues repeated this experiment with college students and obtained similar results.

Many studies have demonstrated that viewing violence on television desensitizes viewers to subsequent violent images. However, it has not been established whether this desensitization occurs only for violent portrayals on television or in movies, or if the desensitization also occurs toward violence in the real world. This is one area of future investigation in desensitization theory (Comstock, 1989).

## Hypotheses

The present study seeks to examine the effects of violence on aided and unaided recall for factual details occurring before and after the violent video under conditions where viewers are desensitized because they are regular violence viewers versus those viewers who are not. In accordance with excitation theory and desensitization theory, the following hypotheses are proposed:

H1: The mean recall score for information presented before the violence will be less for subjects exposed to the video violence than for subjects not exposed to the violence.

H2: The mean recall score for information presented before the violence will be greater for subjects desensitized to violence and exposed to the stimulus than for non-desensitized subjects exposed to the stimulus.

H3: The mean recall score for information presented after the stimulus will be greater for subjects exposed to the violent stimulus than for those subjects not exposed.

H4: The mean recall score for information presented after the violent stimulus will be greater for desensitized subjects exposed to the violence than for subjects not desensitized.

## METHOD

A pool of 77 subjects from an undergraduate advertising course at a large university participated in a post-test only control group experiment. Each subject was randomly assigned to the experimental (violence) or control group (no violence) using a color code. All participating subjects were asked to fill out a preliminary questionnaire. After the subjects completed the form, all consenting participants who had been randomly selected to view the non-violent video described below were asked to follow members of the research team to an auditorium-style room in an adjacent building[3]. The subjects remaining in the original auditorium who viewed the violent version of the movie constitute the experimental group, while those who moved are the control group.

Both groups were shown a 5:23 video clip of the movie, "Henry: Portrait of a Serial Killer." The clip was projected onto a large screen in both auditorium-style rooms. The experimental group saw the entire 5:23 as it appears in the original movie. In this clip there is a sequence of 48 seconds depicting a murder scene in which two men repeatedly stabbed another man with an electric prodder on parts of his upper body. The victim was choked with an electrical extension cord and his head was smashed with a television set. The television was eventually plugged into an outlet sending electrical charges throughout the body and thus causing an excessive amount of bleeding. On the other hand, those in the control group did not see the 48 seconds of violence contained in the original clip. Those 48 seconds were replaced with a nonviolent clip taken from another part of the movie[4]. Therefore, the control group viewed the same material as the experimental group for 2:40 before the violent scene and 1:55 after the violent scene, but was not exposed to the violent stimulus (Figure 1).

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[3] No subjects dropped out during the walk from building to building.

**Figure 1** Schematic representation of stimuli used in experiment

| | | |
|---|---|---|
| Experimental Group | Total = 5:23 | |
| **2:40** | **:48**<br>**Violence** | **1:55** |
| Control Group | Total = 5:23 | |
| **2:40** | **:48**<br>**No Violence** | **1:55** |

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[4] The 48 seconds of nonviolence showed a man slowly driving along the highway at night.

After the subjects viewed the clip they were asked to complete a 19-item questionnaire that tested their recall of facts from the movie clip. Seven of the items on the questionnaire tested recall of factual details occurring before the violent stimulus, and seven questions tested recall of factual details after the stimulus. Four of these fourteen questions were randomly assigned in unaided form to one version of the questionnaire and randomly assigned in aided form to a second version of the questionnaire. Thus, one-half of the subjects in the experimental group and in the control group received the unaided version of these four questions, while the other half of each group received the aided version of these four questions. These four questions were designed to measure recall of details that occurred 1-4 seconds before the stimulus, 1-4 seconds after the stimulus, one minute before the stimulus, and one minute after the stimulus. In addition, other items measured the overall appeal of the movie clip and the type of movies subjects generally watched.

Although both aided and unaided recall questions are used to assure that recall was adequately measured, the responses of both types of questions will be used in a general recall index unless we find evidence for differences for two types of recall measures.

## RESULTS

### Subjects

Of the 77 subjects who participated in the study, two were disqualified because they had seen the movie used as the stimulus[5]. Thus, the total number of subjects was 75[6]. Of the 75 respondents 36 were male and 39 female. Although the subjects ranged in age from 19 to 32 years, 75% were 20 or 21 .

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[5] The first page of the questionnaire asked respondents to circle movies they had seen. Included in the list of 48 movies was the experimental stimulus; both respondents circled this movie.

[6] The number of subjects in the experimental group equaled 38 (19 aided; 19 unaided) and the number of subjects in the control group equaled 37 (18 aided; 19 unaided).

years old. Nearly all of the respondents (97.4%) were upperclassmen (i.e., juniors or seniors), and over 95% were advertising majors[7].

## The Recall Measures

Each answer to the questions that dealt with factual information about the film clip were coded as a 1 for correct and a -1 for incorrect[8]. Another question asked how certain or uncertain the respondent was about their answer. The subjects' certainty of the correctness of their answer was multiplied by the -1 or +1. Thus, respondents who gave a correct response and were certain of the response received a value of +5 for the answer while the incorrect response with high certainty would earn a -5. This equation provided the opportunity to distinguish between respondents who actually recalled the information and those who by chance provided the correct response.

An index was created from the pre-violence (Table 1) and post-violence (Table 2) recall measures. As mentioned above, the response to each question that dealt with information before the violent stimulus was multiplied by subjects' level of certainty of their response. These newly created scores were summed and averaged to create an index of recall of information presented before the stimulus. Scores ranged from 35 to -35. The same procedure was conducted for questions dealing with events after the stimulus, which resulted in an index of recall of information presented after the stimulus.

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[7] The use of college students is consistent with previous studies on violence and cognitive processing (Loftus & Burns, 1982; Mundorf et al., 1990).

[8] All missing data and "don't know" answers were considered incorrect responses.

**Table 1 Measure of recall of information presented pre-violence viewing**

| Event | % Correct | M Sureness | SD |
|---|---|---|---|
| X - 7[9] | 96.0 % | 4.7 | 0.8 |
| X - 6 | 6.7 | 1.6 | 0.8 |
| X - 5 | 64.0 | 4.6 | 0.8 |
| X - 4 | 84.0 | 3.9 | 1.3 |
| X - 3 | 66.7 | 3.8 | 1.6 |
| X - 2 | 34.7 | 2.4 | 1.4 |
| X - 1 | 50.7 | 3.2 | 1.5 |

**Table 2 Measure of recall of information presented post-violence viewing**

| Event | % Correct | M Sureness | SD |
|---|---|---|---|
| X + 7[10] | 29.3 % | 1.8 | 1.1 |
| X + 6 | 17.3 | 1.3 | 0.7 |
| X + 5 | 88.0 | 3.6 | 1.4 |
| X + 4 | 34.7 | 3.4 | 1.2 |
| X + 3 | 0.0 | 1.3 | 0.7 |
| X + 2 | 58.7 | 2.1 | 1.3 |
| X + 1 | 86.7 | 3.4 | 1.4 |

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[9] The variable name (X-7) indicates the question was about an event seventh in order before the violence, i.e., X-1 is for an event immediately before the violent segment.

[10] The variable name (X+7) indicates the question was about an event seventh in order after the violence, i.e., X+1 is for an event immediately after the violent segment.

### The Desensitization Measures

The questionnaire included several indicators of desensitization for tendency toward violence viewing. Participants indicated from a list of 47 movies those movies they had seen[11]. The goal was to identify any subjects who had seen the movie used as the stimulus in this study, and to obtain a measure of general violent movie viewing habits.

The list of movies included many genres. After coding the movies as either seen (1) or not seen (0), we conducted a factor analysis to determine whether there was a violent films factor. A Principal axis factoring, Varimax solution indicated a 3-factor solution. Movies loading on the factor that appeared to represent violent movies included the 13 movies in Table 3.

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[11] The 47 movies included: About Last Night, National Lampoon's Animal House, Bloodsport, National Lampoon's Christmas Vacation, Commando, Die Hard, The Exorcist, The Firm, The Great Outdoors, Henry: Portrait of a Serial Killer, La Femme Nikita, Natural Born Killers, Pulp Fiction, Seven, Terminator II (T2), What About Bob?, Aliens, Basic Instinct, Body Double, Clear and Present Danger, The Cook, the Thief, His Wife, and Her Lover, Disclosure, Farewell, My Concubine, The Fog, Halloween, Interview with a Vampire, Mrs. Doubtfire, Nightmare on Elm Street, Stargate, Silence of the Lambs, Time Cop, Wild at Heart, Beaches, The Bodyguard, A Clockwork Orange, Death Wish, Dumb and Dumber, Ferris Bueller's Day Off, Footloose, Hard to Kill, The Last Boy Scout, Marathon Man, Nine Months, The Secret Garden, Stripes, Waterworld, and Wyatt Earp.

**Table 3 List of movies determined to be violent**

| Movie | % of Subjects Seeing Movie | |
|---|---|---|
| 1. Basic Instinct | 88.0 | |
| 2. Clear and Present Danger | 76.0 | |
| 3. Commando | 49.3 | |
| 4. Die Hard | 88.0 | |
| 5. Dumb and Dumber | 72.0 | |
| 6. Halloween | 56.0 | |
| 7. Hard to Kill | 49.3 | |
| 8. The Last Boy Scout | 62.7 | |
| 9. Natural Born Killers | 68.0 | |
| 10. Nightmare on Elm Street | 78.7 | |
| 11. Stargate | 48.0 | |
| 12. Stripes | 52.0 | |
| 13. Time Cop | 44.0 | |
| Index | $M$ = 8.3 | $SD$ = 3.3 |

After scoring (1=seen and 0=not seen), a summed index of the 13 movies were correlated with four other questions[12] that measured violent viewing habits to validate the movie index as an indicator of desensitization. The correlation coefficients indicated a moderate correlation between the two measures that dealt directly with the violent stimulus ($r = .33$, $p \leq .002$; $r = .37$, $p \leq .001$) and a very strong correlation between the two measures that asked about violence viewing in general ($r = .67$, $p \leq .001$; $r = .68$, $p \leq .001$). (See Table 4.) Based on

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[12] Two of the questions asked, respectively, how interesting and how upsetting the violent stimulus was. The other two questions asked, respectively, how likely one is to see a violent movie and how appealing violent movies are.

these correlations, we were relatively confident about using the movie index as an indicator of desensitization.

**Table 4 Correlations of desensitization to violence measures with movie index**

| | | Mean | SD | r | p |
|---|---|---|---|---|---|
| 1) | Found Violent Stimulus Interesting | 3.3 | 1.6 | .33 | ≤ .002 |
| 2) | Found Violent Stimulus Upsetting | 4.6 | 2.0 | .37 | ≤ .001 |
| 3) | Likely to View Violent Movies | 4.9 | 1.7 | .67 | ≤ .001 |
| 4) | Find Violent Movies Appealing | 4.1 | 1.8 | .68 | ≤ .001 |

The movie index was used to categorize subjects in terms of their violent viewing habits. Based on a median split, two levels (high and low) of sensitization to violence were created. Those who saw between 9 and 13 of the violent films (54.7 %) were classified as highly desensitized to violence. Subjects who saw 0 to 8 of the movies (45.3%) were categorized as subjects with low desensitization to violence. The high and low categories of desensitization were used to test for a multiple analysis of variance on pre-violence viewing recall (Table 1), and post-violence viewing recall (Table 2).

## Hypotheses Tests

A t-test or an ANOVA, as appropriate, was run to test our hypotheses for pre- and post-violence recall. We first hypothesized that those exposed to video violence would recall less about information presented before the violence than would those who did not see the violence, but pre-violence viewing found no main effect for the viewing [F = (1, 73) = .47, $p \leq .50$]. The second hypothesis proposed that those who are desensitized to violence and exposed to the video violence would recall more about information presented before the violence than would those not desensitized. However, we found no interaction between the stimulus condition and level of desensitization [M = 1.3, SD = 1.2; M = 1.2, SD = 1.4 (t = .17 (37), p ≤ .44)]. (See Table 5 and Figure 2.)

Additional analyses for recall before the violence indicated no significance between groups in terms of low desensitization level [M = 1.3, SD = 1.2; M = 1.4, SD = 1.3 (t = .21 (32), p ≤ .42)]. Similar findings resulted when the means were compared for both groups based on high desensitization [M = 1.2, SD = 1.4; M = 1.5, SD = 1.1 (t = .74 (39), p ≤ .24)]. Comparison of means within the control group in terms of desensitization level also yielded no significance [M = 1.4, SD = 1.3; M = 1.5, SD = 1.1 (t = .32 (34), p ≤ .38)]. (See Table 5 and Figure 2.)

Our third hypothesis stated that for those viewing violent stimuli, recall for information presented after the stimuli would be greater than for those who did not see the stimuli. Analysis of variance found no main effect for post-violence viewing or for desensitization [F (1, 73) = .34, p ≤ .56].

The fourth hypothesis suggested that those who are desensitized to video violence and exposed to the violence would recall more after the violence than would those not desensitized. There was no significance within the experimental group in terms of desensitization level [M = .4, SD = .7; M = .6, SD = .7 (t = 1.13 (37), p ≤ .14)]. (See Table 5 and Figure 3.)

However, additional analyses for the recall means after the violence indicated significance for two of the three comparison groups. Significance was found between groups among highly desensitized members [M = .6, SD = .7; M = .12, SD = .7 (t = 1.93 (39), p ≤ .03)] as well as within the control group when comparisons were based on level of desensitization [M = .7, SD = 1.1; M = .2, SD = .7 (t = 1.72 (34), p ≤ .05)]. No significance was found for the recall measure after the violence between groups among subjects with low levels of desensitization [M = .4, SD = .7; M = .7, SD = 1.1 (t = 1.10 (32), p ≤ .14)]. (See Table 5 and Figure 3.)

Table 5 Pre and post viewing recall and desensitization of violence viewing

| | Pre-Violence Viewing | | Post-Violence Viewing | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| Desensitization | | | | |
| High | 1.2 | 1.5 | .63 | .19 |
| Low | 1.3 | 1.4 | .37 | .71 |

**Figure 2**

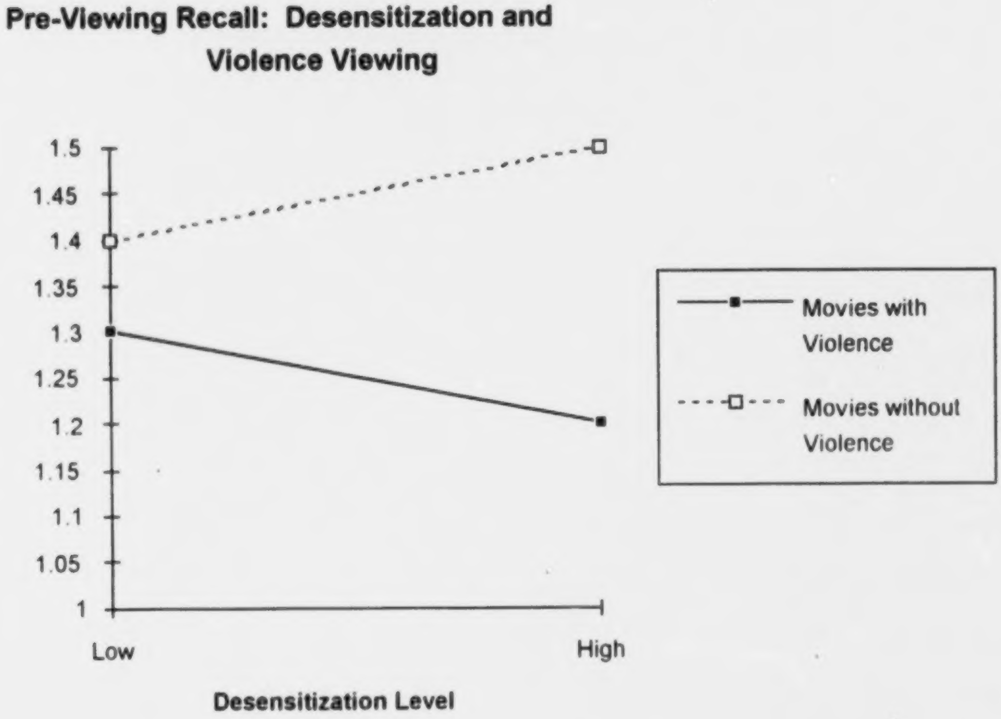
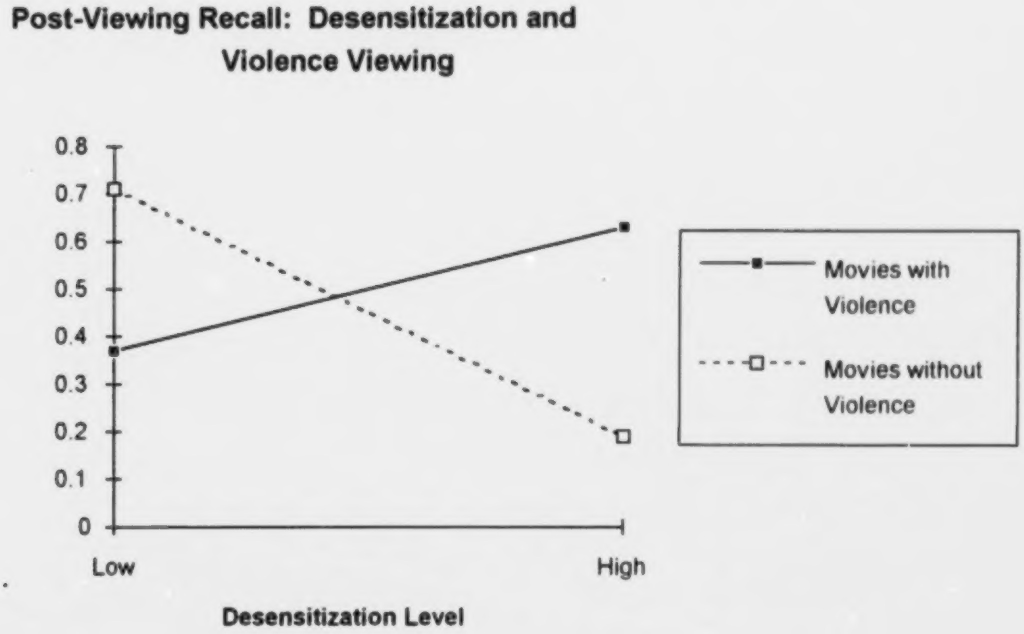


**Figure 3**



Post-Viewing Recall: Desensitization and Violence Viewing

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## LIMITATIONS

This study presented threats to both internal and external validity. One such threat to internal validity was instrumentation. First, subjects who viewed the non-violent clip were taken to another building on campus. The 3-minute walk could have elevated physiological arousal levels in the control group before viewing the film clip, while the experimental group did not receive such pre-experiment arousal. The different levels of physiological arousal between the two groups of subjects could have affected subjects' subsequent recall of film details.

Second, subjects were administered the study in two locations and the film clips were played on different screens using different video projection units. Moreover, the images projected by the two video machines varied slightly in color. This could have affected items in the survey that contained references to color.

Third, a couple of questions were answered correctly by nearly all subjects in both conditions, while one was not answered correctly by any subjects in either condition. Sufficient variance on all questions might have yielded more significant findings.

An external validity issue present in this study is generalizability. Replication of the study is needed before we can confidently generalize our findings. One key element that should be examined is the interaction effect found for post-violence viewing recall. More data is needed to help explain the finding that shows non-desensitized subjects who do not view a violent stimulus have better recall than those desensitized to violence but who are not presented the violent stimulus.

## CONCLUSIONS

### Discussion

As the results indicate, a main effect was not found for recall of information before violence viewing, nor was there an interaction with desensitization. In addition, recall of information after the stimulus produced no main effect. However, there was an interaction between violence viewing and desensitization for post-violence recall measures.

Three of the post-violence viewing cells mirror our hypotheses. We expected subjects who were desensitized to violence to have greater recall than those not desensitized. We also expected those who were not desensitized to violence and who were exposed to the violent stimulus to score lower on the recall measure. However, those subjects not exposed to the violent stimulus and not desensitized to violence scored highest on the recall measure.

One explanation for such a result might be that those subjects who are not desensitized and who did not receive the violent stimulus are not regular movie watchers. Perhaps these subjects were aroused by the movie clip, despite its lack of violence, which enhanced their ability to rehearse the information. Such an occurrence is in accord with excitation theory. When subjects are exposed to arousing material it enhances their ability to process information because their senses are heightened. Since the material was non-threatening there was little chance the state of arousal would have reached a point at which the subjects' mental processes would have ceased to function properly. Support for this explanation was found when means for desensitized and non-desensitized subjects in the control group were compared ($M$ = .5, $SD$ = .2; $M$ = .6, $SD$ = .1 ($t$ = 1.94 (34), $p \leq .03$). Furthermore, subjects in the non-desensitized group on the average watch less movies ($M$ = 21.1, $SD$ = 5.9) than those who are desensitized ($M$ = 29.5, $SD$ = 4.4 ($t$= 7.09 (73), $p \leq .001$). This result offers additional support to the notion that the non-violent film clip was arousing to the non-desensitized subjects because they do not see as many movies as those desensitized.

Another possible explanation might be that these subjects are lower thrill seekers than those desensitized to violence, and they might generally tend to process information more efficiently than their counterparts in the experimental group.

Perhaps the desensitized nature of the subjects requires a significant level of arousal that was absent in the control stimulus. As mentioned above, an arousing stimulus can heighten the senses, which in turn may produce greater recall. However, when a stimulus is not arousing to an individual, such as the non-arousing stimuli presented in the control group, desensitized individuals may have even more trouble recalling information because they do not achieve a state of arousal that heightens their senses and mental processes necessary to encode information in their memory. The implications of this finding may have a dramatic effect on the learning process. Educators may have to resort to scaring their students to get them to learn something.

## SUGGESTIONS FOR FUTURE RESEARCH

### Application

This study leads us to ask several questions. How do we increase learning for high violence viewers? Do we present these thrill seekers with information/stimuli that increases their fear and arousal levels prior to presenting the information we want recalled? As for non-thrill seekers, if we need to arouse these individuals, how can we do so without frightening and violent stimuli?

These questions also raise important social concerns. How can we expect to teach young people in a society where violence in the movies/media prevails? As noted earlier, will we have to scare the living daylights out of today's 10-year old raised on video games and media to get him/her to recall anything? Should learners be segmented by thrill seekers and non-thrill seekers? If our hypotheses hold true, we could be in for a "frightening" future as the level of fright needed for arousal and learning increases.

There are several possibilities for future research in this area. First, replication of this study could control for internal and external threats to validity more effectively and possibly provide more accurate results. Both experimental and control groups could be tested in the same room, using the same screen and video machine. In addition, recall questions with little or no variance should be removed and new questions added.

Second, this study only addressed movie (i.e., fictional) violence. Future research could focus on real-world violence. Such an investigation could provide information as to whether the perception of violence as real or fictional affects viewer recall.

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# DEVELOPING AN INTEGRATED THEORY OF RECALL OF NEWS STORIES

by

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# ABSTRACT

This paper has two objectives: First, a theory of news recall is developed from studies of psychological attention sets, principles of perception, studies of folk-tale recall and theories of memory storage. Its seven propositions predict the general nature of patterns of recall among individuals who attend to and retell a typical spot news story. The second objective is to check these predictions against data obtained from a large-scale news recall experiment. The results indicate support for the theory.

# Developing an Integrated Theory of Recall of News Stories

This paper has two objectives: The first is to develop a theory of news recall based on several major psychological traditions. The second is to check the theory's predictions against data obtained in a large-scale experiment. The intellectual foundation for the development of the theory comes from a broad range of classic and contemporary studies of psychological attention sets, Gestalt principles of perception, Bartlett's studies of social factors in folk-tale recall and contemporary theories of memory storage. The seven-proposition theory summarizes the general nature of the memory limitations and the patterns of recall that will be obtained when individuals attend to, remember, and retell a typical spot news story.

The second major objective is to check empirical data obtained from a large-scale news recall experiment against what the theory predicts. To do this, each of 480 subjects was exposed, in a controlled individual session, to one of three news stories that was presented by one of four media (newspaper, television, radio and personal computer). Each of the three stories was of similar length and each focused on an event that is commonly reported in local news--a house fire with no loss of life, a car accident in which a person drowned, and a murder of members of a local family. Immediately after exposure in the sessions, subjects were asked to recount as many details of the story as they could. Their versions of the story were recorded on tape for later review. The analysis of the data, and the conclusions reached, focus on three issues concerning the ways in which these stories were recalled by members of a well-motivated, attentive and intelligent audience: To what degree were the facts recalled accurately? What kinds of details were retained or forgotten? And, finally, into what patterns were the details organized for recall and recovery? The findings appear to offer support for the theory.

## Background

Within the growing body of evidence on recall of news stories several lines of inquiry can be identified: Many of the studies that have been published over the last half century have been concerned with comparisons between media. That is, they contrast the amount of information retained by subjects exposed to, say, newspapers, as compared to radio or television (Stauffer, Frost and Rybolt, 1981; Williams and Ogilvie, 1957; and Brown, 1977). Another focus has been to identify demographic characteristics among an audience that make a difference. Thus, quantitative patterns of recollection of news stories have been compared among people of different ages, genders, educational attainment, income and ethnic backgrounds (Gunther, B., 1987; Tichenor, P.J, Donahue G.A. & Olien, C. N. 1970 & Robinson, J. P. 1957). A number of recent studies have attempted to relate news recall to specific concepts and issues drawn from psychological studies of memory (Prabu, D., 1996). Still another branch of news recall studies have assessed the role of production factors, such as story formats--inverted pyramid vs narrative used by newspapers, talking heads vs voice-over-tape in television, and so on--in determining which stories will be remembered better (Berry, C., Gunther, B., & Clifford, B., 1982; Gunther, B., Berry, C. & Clifford, B., 1982; Brosius, H., 1991; Hayes, D. & DeFleur, M., 1992).

### Limited Recall: A General Consensus from Prior Studies

What all of these communication research traditions have in common is a conclusion that people remember relatively little after exposure to news stories. Some differences have been found from one medium to the next--with recall from print media being somewhat better than from broadcast news. However, the general situation is that people just do not recall very much, even when tested immediately after exposure to a news story. For example, in a survey study, adult viewers of TV news could recall the topic of slightly more than one story from an average of 20 typically presented in a broadcast. In another, more than half of those interviewed could not recall the content of even a single story presented in a newscast containing 19 items (Neuman, 1976). Even when people are contacted ahead of time and agree to pay close attention, recall is still very low (Katz, Adoni & Parness, 1987). Thus, a substantial literature indicates that recall of news of any type is very limited, regardless of media, demographics or production variables.

## Assumptions of Audience Deficiency

For journalists, this consensus can be frustrating. It raises the uncomfortable question as to whether they are doing their job right. Some assign blame to journalists on the grounds that the limited time and space they devote to any story precludes effective presentation of details with a consequent loss of audience recall (Gunther, 1987, xi). However, threading through much of the literature on the limited degree to which people recall news is an implicit assumption that there is something wrong with the audience--some shortcoming that they ought to try to overcome. For many researchers, the gap between what people claim and what they do poses a clear inconsistency:

> Although people say that [news is significant] in their lives, behavioral research concerning the use of different mass media and also cognitive research concerning information uptake from the media togther provide evidence that often contradicts that personal claim. (Gunther, 1987, x).

Various explanations have been advanced to try and explain this inconsistency. These include assuming that audiences have limited intellectual levels, that they fail to concentrate adequately or that it is due to the preponderance of older people attending to the news with memories failing with age.

Rather than dismiss this inconsistency as a deficiency of the audience, or due to poor encoding on the part of journalists, it may be more appropriate to view it as an indicator of efficiency on the part of people attending to the flow of news. That is, it is entirely likely that people attend to news employing the same efficient habits of perception and memory that they use when focusing their attention on any complex aspect of their social environment. For example, just as people use stereotypes for responding "efficiently" to individual representatives of various social categories (minorities, women, the aged, etc.), they may deliberately exclude from the task of remembering any news content that has little meaning in their lives. In any case, limited remembering is a factor that must be addressed in any comprehensive theory of news recall.

## Objective One: Development of a Formal Theory

What is needed is a theory that addresses the basis of such limited recall by integrating as much as possible of what is known on all phases of the experience of a member of an audience who pays attention to a news story and then commits it to memory for later recall. Such an integration requires that concepts, theories and conclusions be drawn from a broad spectrum of sources. To illustrate, four such phases that such a theory must encompass can be identified: The first is a pre-perception phase, in which the individual's various psychological and cultural "sets" determine the amount of attention that will be paid to a story, and pre-indicate to what degree it will be seen as relevant to his or her life-concerns. Obviously, these sets are an important factor in the individual's motivation to learn and accurately recall the content of the story. A second is the perceptual phase, in which the essential ideas in the story being presented by a medium are selected and understood as a meaningful pattern of concepts and relationships that the person recognizes and can readily interpret. In the third, the encoding and retention phase, the person organizes into memory what seem to be the main ideas of the story, winnowing out what appear to be unnecessary or extraneous details, and storing the resulting coherent configuration in working memory. Finally, in a recall phase, the stored configuration that the individual brings to mind may for a number of reasons differ from that originally stored. If the story is retold, still further modifications in form and content can be expected.

The form advocated for such theories in many books on communication research (and general social science) methodology is a set of interrelated propositions that, if true, predict the nature of some form or behavior that can be observed. For example, Reinard defines a theory as a body of interrelated assumptions that, if taken as true, explain or predict whatever is under study (Reinard 1998). Methodologists note that such theories have three characteristics. These include logical consistency among the propositions so that a predictive conclusions can be drawn from premises, clearly defined constructs that define what the theory is all about, and clear ways to relate the theory to phenomena that can be observed through empirical research.

The present section will review briefly several classic traditions of conceptualization and research in psychology that appear to be relevant as foundations for developing a series of propositions that can explain how people remember a news story. Specifically, the discussion below will address (1) anticipatory sets that influence an individual's attention to a story, (2) how he or she goes about perceiving the information provided, (3) how the person organizes it into a meaningful pattern consistent with his or her personal and cultural expectations, and (4) how it is committed to memory in a form that the person can recall, often with a significant but predictable level of inaccuracy.

Attention: Anticipatory Sets Prior to Exposure to a Story

The concept of a *set* comes from the earliest days of empirical psychological research (Catell, 1886). The most celebrated studies of psychological sets were those of Wilhelm Wundt and his students. They were carried out in the first psychological laboratory, established in Leipzig in 1879. These were simple experiments showing that when subjects expected an event to happen, they were able to react to it much faster than when it was not expected. In other words, they were psychologically "set" to respond in a particular way. Today, the concept of set retains essentially the same meaning. A person approaching an experience--such as reading, hearing or viewing a news story--brings to the task a number of learned expectations or psychological sets that influence attention.

Level of personal relevance. One well-understood category of sets pertains to the person's cognitive make-up. The individual will have an existing structure of preferences, interests and other predispositions that will play important parts in determining how much attention is paid to a particular news story about a specific topic. This is the basis of much selectivity in attention. It plays an obvious role in the high levels of interest in sports stories on the part of many individuals, attention to financial stories by business persons, preoccupation with entertainment news shown by others, and so on.

Standardized scripts, frames and narrative schemata. Less obvious are culturally-defined sets that bring people to anticipate what they will encounter in an often-experienced situation. Important here are what psychologists and others call scripts, a concept that has been used in research on television. This literature has been reviewed by Harris (Harris, 1994). A script is a general set of anticipations about what will be encountered in a behavioral situation that is familiar. Examples are going to a restaurant, checking in at the airport, attending a cocktail party, and so on. The learned script is not only a product of having experienced such a situation before, but it also allows the person to anticipate who will do what with whom with what consequences, and generally what forms of behavior will be required. An almost identical idea is a frame. A more recent concept, this refers to an anticipated structure of a stereotyped situation (Minsky, 1974). Scripts and frames play a part in attending to a news story--a familiar experience to most people. It comes as no surprise to them, therefore, that the story will present information about something that happened to somebody, somewhere, with a number of consequences.

A related idea is the narration schema--sometimes called a "narrative script" (Stein, Ornstein, Tversky & Brainard, 1997; Cofer, 1976). We learn from childhood that all "stories" follow a certain pattern and we come to expect it. In virtually any story a setting is introduced, along with a set of characters. Things happen to the characters or actors as events unfold. Those events have consequences--sometimes positive, sometimes negative--but some sort of resolution is reached by the end of the story. Spot news stories are often structured in this manner: The house catches on fire, the firemen arrive, the spokesperson is interviewed, the fire is extinguished, the plight of the residents is discussed and the cause of the fire is identified.

Whether conceived of as scripts, frames or narration schemata, it is clear that people encountering any story, including one presenting news, will be "set" by past experience to anticipate a somewhat stereotyped structure in what they will encounter. Thus, sets play a significant part in focusing attention and influencing the organization of perception.

## Perception: Selectivity and Patterning

The study of human perception, an important stage in the experience of a member of an audience attending to and understanding a news story, has been studied intensively by psychologists since the beginnings of the twentieth century. A massive literature, based on an impressive accumulation of experiments and other types of empirical research, has revealed significant insights into the way in which physical and verbal stimuli are selectively apprehended by the senses and transformed into a configuration of meanings that can be stored in memory (Anderson, 1985; Eysenk, 1987). Of particular interest in the present context is attention to and perception of verbal material, such as a narrative, a story or a news report, and the way it is organized into a meaningful configuration or pattern that can be stored in memory.

Selecting and winnowing details. It is well understood that the process of perception is highly selective. Some details will stand out in the perceiver's focus of attention because, as noted earlier, they are personally relevant to his or her interests. Others will be perceived very clearly because they are central or unusual. Still others, interpreted as non-essential in understanding the events being observed, are likely to be ignored. In any case, it is the influence of selectivity in what audience members apprehend with their senses in a stimulus situation that becomes the overriding consideration when people construct patterned interpretations of the meaning of events that they witness. That initial perceptual pattern will continue to be the organizing factor as they assemble those meanings into a form that can be stored in their memory and recalled later.

Gestalt principles of perception. No explanation of the process of perception stands out more clearly in the annals of psychology than that advanced by the Gestalt School. While Gestalt principles are most frequently associated with the perception of physical stimuli, they can be applied to the ways in which members of an audience interpret verbal accounts of human social actions and events as well (Allport & Postman, 1945). Specifically, some of the principles of

Gestalt psychology can be of help in understanding the perception of news.

Gestalt psychology began in the early 1920s in Germany in Carl Stumpf's Berlin Psychological Laboratory. Its founders were Max Wertheimer, Karl Koffka, Wolfgang Kohler. Each left Germany to migrate to the United States where they continued to develop principles of perception that remain identified with the school (Koffka, K., 1922). Systematic statements of the Gestalt theories were set forth in now-classic books by Wolfgang Kohler and by Kurt Koffka (Kohler, 1929; Koffka, 1935).

An important feature of the Gestalt school is that it was founded on the assumption that processes like human perception and learning cannot be explained by identifying the elementary sensations and associations involved in immediate experience. That is, people do not apprehend a stimulus situation as an unorganized set of independent elements (sounds, colors, smells or tactile sensations) apprehended with their senses. They perceive the meaning of what they observe in terms of patterns of inter-related elements of experience. In observing an auto accident, for example, eye witnesses do indeed hear sounds, see colors, and so on, but their overriding interpretation is that of an organized configuration of experiences--a sequence of events in a recognizable time order, leading to a set of outcomes and consequences logically related to prior events. If asked to recall what they saw and heard, including a news story, it will be this pattern around which they will organize what they will be able to remember.

## Memory: Contrasting Approaches in Psychological Traditions

Investigations into the functioning of human memory, using a scientific approach, began more than a century ago (Ebbinghaus, 1885). Patterns of recall of different types of messages presented by various media have been under study by psychologists for many decades. Kellerman reviewed 233 books and articles published between the 1950s and 1985 on this general topic. She concluded that little consensus had been reached regarding the influence of and type of media on memory (Kellerman, 1985). In 1997, psychologists Stein, Ornstein, Tversky and Brainard (1997) citing more than 1,250 published works, concluded that memory for such material "is both accurate and inaccurate, depending on the conditions under which information is encoded and retrieved"(p.2). In short, extensive investigations of memory for prose, folk tales, or everyday events, by large numbers of psychological investigators have not produced consensus regarding theories that can explain how people recall news stories. Theories of memory functioning and storage abound, with almost as many models and explanations as there are investigators. It is a subject of intense investigation and lively debate (Roediger and Craik, 1989).

Nevertheless, memory is a key factor. Regardless of what or how people initially perceive a physical stimulus, an event or a story, its meanings may vanish if they are not committed to memory. The experience must be organized in such a way that it can be committed to the person's "mental filing system" in a form that can be recovered if needed. Thus, cognitive organization of a perceived event for the purpose of encoding it in memory is the third major phase that takes place in the experience of recalling a news story. To be able to accomplish this phase of cognitive processing of news, the story's elements of meanings must be interlinked and retained in such a way that they seem logical and consistent with the expectations of the perceiver. Theories of memory organization and storage, therefore, may provide explanations of how this phase is accomplished.

Attempts to conceptualize human memory go back at least as far as Plato, but the scientific study of human memory by psychologists did not begin until late in the nineteenth century. Since that time, it has been characterized by two major but very different methodological traditions. The most prominent stems from the classic experiment of Hermann Ebbinghaus. Published in 1885, it was from the data obtained in this investigation that he produced his well-known "curve of forgetting" (Ebbinghaus, 1885, 27). The second tradition, much less used in the past but now receiving much more attention, began with the 1932 studies of the recall of folk-tales by Frederick C. Bartlett. It was in these studies that the concept of "schema" was first used. Also from Bartlett's studies came the initial ideas for the concepts leveling, sharpening and assimilation inherent to Allport and Postman's embedding theory of recall in rumor transmission (Bartlett, 1932).

The Ebbinghaus tradition. The experimental approach used by Ebbinghaus dominated the investigation of human memory by psychologists for well over one hundred years. Ebbinghaus used himself as a subject, memorizing stimulus material and testing himself after various periods of time. He was able to show a characteristic pattern of forgetting--rapid at first and slowing over time--that describes how human beings lose the ability to recall stimulus material that they have memorized. Even today, such investigations often have two major features that were central to Ebbinghaus methodology. That is, they are almost always conducted using tightly controlled experimental laboratory procedures, and they make use of stimulus material deliberately designed to limit cultural influences.

Essentially, Ebbinghaus set about to memorize various combinations of "nonsense syllables," which were meaningless combinations of a vowel between two consonants, and to test his recall of those combinations after various periods of time had elapsed. He relied on repetition and rote memory to acquire the stimulus content initially. And even though he had a sample of only one (himself), his initial study used a complex and tightly controlled design in which numerous conditions and variations were observed.

The reaction against Ebbinghaus. Today, more than a century later, a great body of publications--literally hundreds of books and thousands of journal articles based in large part on the Ebbinghaus experimental approach--have been published on one aspect of human memory or another (Estes, 1987). Such memory experiments usually meet high standards of experimental and measurement precision. Multiple subjects are used and studied within statistically sophisticated research designs. However, the stimulus material that subjects are asked to memorize still often consists of culturally neutral content--something like a series of numbers, word fragments, abstract shapes, color panels, simple word-pair associations, or some other content that is not embedded within a meaningful context. There are many exceptions to this generalization, but overall, the influence of the Ebbinghaus approach to the psychological study of human memory is still very evident in these types of experiments.

In recent times there has been a reaction against the Ebbinghaus tradition. Critics claim that this huge body of theory and findings does not appear to have provided explanations that have immediate and direct relevance for much of what people attend to, learn and then recall in their daily lives (Cohen, 1989). Because of this limitation, some psychologists have advocated abandoning the Ebbinghaus tradition entirely. For example, Neisser (1978) advanced what was then a new and radical position:

> . . . he dismissed the work of the past 100 years as largely worthless. . .Neisser believes that the important questions about memory are those that arise out of everyday experience. We ought, he claimed, to be finding out how memory works in the natural context of daily life at school, in the home or at work. . . .The traditional laboratory experiments, according to Neisser, have failed to study all the most interesting and significant problems and have shed no light on them.

Because of growing skepticism about the generalizability of laboratory studies based on culturally meaningless material, there is today a strong movement within psychology to try to study memory in everyday situations. Studies have appeared in recent years on topics such as eyewitness testimony, recall of emotional events, such as sexual abuse, salient medical experiences and a variety of other complex events (Stein, Ornstein, Tversky & Brainard, 1997). What has become more relevant to studies of memory for narrative content, such as that in a typical news story, is the early work of Bartlett.

The Bartlett tradition. In the early 1930s, Sir Frederick C. Bartlett conducted memory experiments making use of a very different experimental approach. He asked British experimental subjects to recall an organized story that they read through twice. Thus, he avoided the use of meaningless material (Bartlett, 1932). The story was "The War of the Ghosts," drawn from a folk-tale of the Kwakiutl--a Native American group in the Pacific Northwest--and it described a seal-hunting episode that turned into a battle. The story sometimes posed difficulties for subjects trying to recall the account accurately because the story contained cultural concepts and activities with which they were not familiar--seal-hunting, ghosts and travel by canoe. However, that very difficulty led to new insights. It allowed the subjects to "modernize" their versions of the stories by using culturally familiar language that was incorporated into the story, sometimes altering its meaning.

In overview, what Bartlett found was that his subjects were able to recall personally constructed general impressions of what they had heard. Their versions were shorter and were organized around what appeared to the subjects as salient details. Their accounts often contained concepts and ways of expressing ideas from their own culture assimilated into their descriptions.

Thus, recall of this type of material was based on what Bartlett referred to as personal schemas, woven into an account that "made sense" within the experience and culture of the person asked to repeat the story.

The "method of serial transmission," used in other studies by Bartlett, provided the basis for the well-known studies of rumors in wartime by Allport and Postman (1947). Those researchers developed an embedding theory to describe changes in an experimental story (rumor) as it was told, remembered and retold in stages from one person to the next. They found a characteristic pattern similar to that reported by Bartlett (1932) in what their subjects could recall and report at each stage: The subjects shortened the story (leveling); organized it around salient details (sharpening); and brought in ideas and expressions from their own culture that were not in the original (assimilation). Allport and Postman applied these concepts to the recall of brief stories as passed serially from one person to the next. In the research reported in this paper subjects retold the story only once (to the experimenter). Nevertheless, these three concepts may offer a conceptual framework for describing what news audiences do when recalling and retelling news stories.

The Bartlett tradition had little influence on the psychological investigation of memory until relatively recent times. Today, few psychologists use material foreign to the culture of experimental subjects, but his procedures of asking them to recall meaningful content (as opposed to numbers, nonsense syllables, etc.) and the methodology of analyzing their personally reconstructed accounts are being more actively used in the study of memory as it functions in everyday life. Obviously, this approach--rather than the Ebbinhaus procedures--is more relevant to the study of how and to what degree people can remember news stories.

Contemporary theories. In the brief space of a journal article, it is impossible to summarize the major theoretical conceptualizations of human memory functioning that are currently being debated and investigated by psychologists who follow either of the above traditions. In the last two decades there has been a virtual explosion of interest and research on memory and memory functions. Literally thousands of experiments and other investigations of a long list of issues and topics have been published. In 1991, an International Conference on Memory was held at Lancaster, England. The 179 papers presented at that conference provided an overall view of current research on this important topic. Most of the central traditions within memory research were represented. Selected reports from that conference provide insights into the directions that such research and theory development are now taking (Collins, Gathercole, Conway & Morris, 1993).

To provide an idea of the scope of current research on memory, investigations have recently been conducted into the following, which represent only a partial list: autobiographical memory; conceptual memory, contextual memory, dual-process influences on memory, episodic memory, eidetic memory, emotional memory, false memories, flashbulb memory, hierarchically organized memory, linguistic memory, long-term vs short-term memory; nonverbal memory, narrative recall, permanent memory, procedural memory, recollective memory, repressed memories, retrospective memory, schemas in memory, scripts in memory, sensory memory, sensory-motor memory (as in driving), spatial memory, visual memory and working memory.

Among these many alternatives, one theoretical direction that may be relevant to the study of news recall focuses on working memory. As Eysenk describes it, "The working memory system consists of a modality-free central executive; an articulatory loop; and a visio-spatial scratch pad"

(Eysenk, 1987). What this appears to mean in simpler terms is that we retain experience in our consciousness (central executive) for at least a limited period; we are able to articulate in words what we have stored there; and both visual and spatial elements play a part in what we recall. Those features of memory do appear relevant and applicable to the recall of news stories. However, as will also be explained, learning, storing and recalling news stories appear to have additional elements that are important for current theories of working memory.

Schema construction and encoding in memory. Schema memory structures provide a contemporary approach to understanding how human beings organize and encode into memory news stories to which they attend. The term came originally from the work of Bartlett, but in recent decades it has been further developed by a body of researchers and theorists to indicate how people organize and store experiences. A schema is a kind of "mental organization" used to remember ideas and events. The term can be defined very simply as a personally organized structure of perceived and remembered experience. Schemata provide the mental structure in which we commit what we perceive to memory. Included in that process is media content--such as a story in the evening news, or one read in the morning paper. Since each person has a unique cognitive structure (of needs, beliefs, attitudes, values and so on) developed from a lifetime of prior experience, it is not surprising that each will encode a personally unique pattern of the details and relationships perceived in a news story. That encoded pattern will be stored in working memory as a schema (Hoijer,1989). Thus, one person's schema for a particular news story may or may not be consistent with that of another. As Harris (1989) puts it:

> The way we comprehend a program we watch on TV is through a constant interaction of the content of the program and the knowledge already in our minds. The mind thinks in response to what we see and those thoughts become an important part of the constructive process of comprehension.

Noted earlier was the concept of a narration schema (Cofer, 1976). As explained, narration schemata for stories include identification of one or more actors, a set of events that those actors have experienced, and a set of consequences brought about by those events. These provide convenient organizing categories that any reader, listener or viewer can use in encoding and storing the details of the Gestalt of meanings developed during the process of perception.

### Retelling: ATheory of Recall of Spot News Stories

From all of the theoretical sources discussed in previous sections, a three-stage theory of recall for spot news stories can be developed (See Fig.1). Consisting of six basic assumptions and a predictive proposition, it incorporates selected fundamental concepts and principles from psychological research and theory regarding attention, perception, memory storage and recall of narrative or story-like content. The theory is stated in such a way that its seventh or predictive proposition is a consequence of the prior assumptions. Thus, if those six assumptions can be regarded "as if" true, and the basic reasoning of the theory is consistent, then recall patterns of news stories should show the characteristics described in the derived seventh ("therefore") proposition.

## Objective Two: Comparing The Theory to Data From The Experiment

The research report that follows compares the results of an experiment with the propositions of the theory. The report consists of a systematic examination of the verbal accounts of 480 subjects who were asked to read, listen to or view and then retell one of three spot news stories. The major question is, were those subjects able to recall a logical Gestalt configuration of salient and other details? In addition, was there evidence of modifications in the accounts of these

Figure 1

## A THEORY OF SPOT NEWS STORY RECALL

### Stage One: Anticipatory Sets Prior to Perception

1. A reader, listener or viewer brings to any story, including a news report, a number of personal anticipatory sets learned from prior experience, including a number of culturally-defined scripts or narration schemata that provide the expected structure of such an account.

2. Those personal sets and culturally-defined expectations influence both the level of attention given to a story and its anticipated structure, which includes identification of a setting in which one or more actors experience a set of events that bring about a set of consequences.

### Stage Two: The Process of Perceptual Organization

3. Perception is a process of organizing a unique Gestalt of meanings for a situation, such as a news story, that has the attention of the individual--a comprehensible pattern of interpretations consistent with personal sets and cultural expectations.

4. The process of perceptual organization of a news story is highly selective, focusing on those details to include in the Gestalt that seem logically needed for consistency, personally salient, or otherwise central, colorful or dramatic; others that appear unimportant will be winnowed out.

### Stage Three: Patterns of Storage and Recall

5. The resulting Gestalt of the story will be prepared for storage in memory as a personally organized schema of linked images, concepts, relationships and other elements of meaning that the person has constructed during the process of perceptual organization.

6. The stored schema will be encoded into working memory to include a number of linked details perceived to be central to the story's setting, principal actors, major events and consequences, others that appear to be dramatic or colorful and still others that the individual may incorporate from other schemata.

7. Therefore: When called upon to recall the story, it will be restated in what the person believes is a logical configuration of central and salient details (possibly plus some dramatic ones) providing a leveled, sharpened and assimilated version of its content.

news stories, following a general pattern of leveling, sharpening and assimilation? If that is the case, evidence is provided in support of the theory.

## Methodology

A large-scale experiment was conducted in which one of three local news stories was individually presented to 480 subjects. In addition, four media were used for the presentations: newspaper, computer, television, and radio. The 3 x 4 factorial design held constant a number of audience and situational variables that can influence what, and how much, people remember from exposure to a typical news story. The major findings from that study have been reported elsewhere (DeFleur, Davenport, Cronin & DeFleur, 1992). However, additional results, not yet reported, are relevant to the present analysis.

Each subject in the experiment was presented with only one story in either the newspaper, computer, television or radio format. Each was told that the purpose of the experiment was to see how much, and what type of information, he or she would remember after carefully reading, viewing or listening to a news story one time. Subjects were told that, immediately after exposure, they would be asked to repeat all of the details that they could remember into a tape recorder.

The subjects who participated in the experiments were students taking introductory courses in media studies or mass communication at one of three universities in the U.S. These included a very large Midwestern state university, a middle-sized northeastern private university and a small private institution with religious affiliation. Obviously, this selection does not result in a sample that is representative of American college students. However, using three different schools did avoid the limitation of reporting results from only a single type of institution.

The 480 subjects were randomly assigned to each of the twelve experimental conditions (40 subjects in each cell). Exposure took place in a quiet room with no one present except an experimenter. The procedures and controls of the experiment were designed to limit the influence of extraneous individual variation, to reduce attention distractions within the environment, and to enhance motivation to recall the story's details. (See Figure 2 for the three news stories used.)

Several factors were considered in the development of the three news stories used in the experiment. These included prior knowledge, proximity, and importance. Since prior knowledge is often cited as a factor influencing recall, this was controlled by using accounts with no history. Proximity is an accepted "news value" that influences interest and recall. This was controlled by using stories that were identified as originating in the local community. Finally, story importance is a factor that has been shown to create audience interest and result in higher levels of recall. This was controlled by using stories with three different levels of newsworthiness. One was a story of a residential fire caused by arson that resulted in property damage. The second story described a car accident, in which the car plunged into a river and caused the driver to drown. The third, at the highest level of newsworthiness, concerned an argument in which a man shot and killed his brother and other members of the brother's family. The news stories were designed to be very similar in the number of words, the types of details, and all other features. These stories were reviewed by a former editor of a major newspaper, a former broadcast news director and a media scholar. All agreed with the newsworthiness ranking of the three stories.

In the newspaper version, subjects were given the story in a typical column format on one printed page. They were asked to read each sentence at their normal pace, but only once. To ensure compliance, each subject was observed by the experimenter during the presentation. Similar requirements were imposed for the computer version in which the story was contained on

## Figure 2

## SPOT NEWS STORIES USED IN THE EXPERIMENT

### Fire Story

A city employee dismissed from his job last night was arrested in connection with a fire that destroyed his boss' $120,000 home at 25 Oak St. this morning.

Warren T. James, 33, 35 Elysian Dr., was arrested at his home Tuesday evening after his former boss, Terry Arlington, director of the Parks and Recreation Department, told police she received three threatening telephone calls Monday from James, said police.

James, who had been fired for poor work performance and frequent ab-sences, had been Arlington's assistant for two years. He was reprimanded twice prior to his dismissal, said Arlington.

Arlington, who lives alone, was at work when the fire broke out. Neighbors called the fire department when they saw flames coming out of an attic window at Arlington's 25 Oak St. home, said Fire Chief Ed Wilson.

Twelve firefighters and three fire trucks responded to the fire which apparently started in the kitchen at about 10 a.m.

Firefighters battled the blaze for about two hours. The fire, which burned for almost half an hour before firefighters arrived, destroyed most of the home, including Arlington's collection of 19th century children's books, Wilson said. He declared the home a total loss.

Two empty gasoline cans in Arlington's dining room led fire-fighters to suspect arson, said Wilson.

A neighbor told police she recalled seeing a blond, slender man, fitting James' description, leaving Arlington's house shortly before the fire broke out.

James is currently at the county mental health center undergoing psychiatric testing, police said.

### Drowning Story

A woman whose car plunged into the Ontario River Thursday afternoon may have suffered a heart attack shortly before her car went off the road.

Norma Bernard, 65, 12 Adams St., was pulled from her car by a police rescue squad and then rushed to St. Joseph's Hospital where she was pronounced dead on arrival, said Emergency Services Director, Dr. Jill Griffin.

Police said they at first thought Bernard, who had been in the partially submerged car for about 45 minutes, might have been alive but suffering from hypothermia.

The tracks across two lanes of River Street initially led police to believe Bernard's car may have skidded off of the twisting, rain-slicked stretch of River Street located two miles east of downtown, said investigating officer Karen Thomas.

However, a preliminary autopsy revealed Bernard may have undergone a heart attack, said Griffin.

Bernard had been on her way to what she thought was lunch at the Golden Buddha restaurant with her husband George, said George Bernard.

In reality, however, she was on her way to a surprise retirement party thrown by her husband and co-workers from the Internal Revenue Service. Bernard had been an accountant for the IRS for 30 years, her husband said.

In the past 10 years, two other individuals also died when their cars went into the river along the same two miles of River Street, said Thomas.

No one from the highway department would comment on why there are no guard rails along the section of road where the accidents occurred.

### Murder Story

A local restaurant owner was arrested on Interstate 90 Thursday night in connection with the murders of four family members and the attempted murder of a fifth family member.

Jeremy Hanna, 45, 124 Forest St., was charged with the murder of his brother Thomas Hanna and three members of his brother's family. Hanna and his brother were co-owners of the Little Middle East restaurant, 62 Ontario St.

Police found the bodies of Thomas Hanna, 42; his wife, Kathy, 40; and their children, Rebecca, 14; and Jeffrey, 6, at their 75 Atlas Road home.

A third child, Joshua, 8, is in critical condition at Park General Hospital after being shot in the chest, said Harrison Boxer, an emergency room supervisor.

Neighbors called police after hearing several rounds of gunfire following a heated argument at the Hanna home at about 5:30 p.m. Several neighbors said they saw the suspect, a frequent visitor to his brother's home, run out of the house and drive off in his van.

A waitress at the Little Middle East restaurant told police that half an hour before the shooting occurred, Jeremy Hanna quarreled loudly on the telephone with his brother, then ran out of the restaurant.

Police said Hanna became enraged after he discovered $5,000 missing from the restaurant's bank account. He assumed his brother Thomas took the money because his brother was a month late on his home's mortgage payment, said police.

Hanna was being held Friday in the county jail in lieu of $500,000 bail, police said.

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one screen and required no manipulation by the subjects. For the stories presented by television, subjects were seated in front of the screen and the taped story was played only one time. Each story was presented in a "word-story" or "talking head" format in which a professional anchor, unknown to the subjects, presented a story with no accompanying video or graphic display. The radio version consisted of the television sound track on audio tape, played only once.

After exposure, each subject's tape-recorded account of the story was transcribed. These accounts were then examined to assess how many (and which) of the details of the story were recalled by the subject, and with what level of accuracy. To accomplish this, each detail in each of the stories was identified and listed. For example, the fire story contained such details as "A city employee was arrested," and "He was arrested in connection with a fire" and "The fire had destroyed his boss's home." The fire story contained a total of 48 separate details; the drowning story contained 37, and the murder story was composed of 48 details. Next, each detail recalled by a subject was scored on a four-point level of accuracy scale, where 0 = "no facts of detail correct;" 1 = "at least some facts essentially correct;" 2 = "most facts essentially correct;" and 3 = "all facts essentially correct." For example, a subject who recalled all 48 details of the fire story very accurately could have earned up to 3 x 48= 144 points.

Two analysts were used to assess the level of accuracy of the details recalled by each subject. The analysts worked independently when scoring each subject's transcription, and the scores were correlated to provide an index of reliability (r = .927). The two detail accuracy scores for each subject, determined by the two analysts, were then averaged for each subject to obtain a final measure of unaided recall of details.

## Findings

The results from the experiment offer evidence for assessing the news recall theory. To make this assessment, four issues can be examined: First, in an overall sense, how well did these 480 subjects remember the story to which they were exposed? Additionally, was a pattern of leveling (loss of details) in evidence? Second, into what Gestalts of meanings did they organize their versions of the story? That is, did they encode it in memory as a logical configuration of situations, actors, events and consequences? Third, which details did they recall best as central or salient, and which tended to be forgotten? In other words, did selective recall and sharpening take place? Finally, were extraneous ideas and meanings incorporated in these configurations? In other words, was there evidence of assimilation?

Limited recall of details. The overall results are consistent with a consensus reached among many previous studies. In an overall sense, recall of details was very limited. To illustrate, the following figures represent how well at least half of the subjects could recall the details of the individual stories, even at the lowest level of accuracy. On average, only 12 of the 48 details in the fire story, that is 25 %, could be recalled even at the lowest level by at least half of the subjects. For the 37 details of the drowning story, the comparable figures were 10 details, or 27%, recalled by at least half of the subjects. Only 9 of the 48 details of the murder story, 19 percent, were recalled by at least half of the subjects, again at even the lowest accuracy level. Thus, in this experiment, even though these subjects were intelligent, urged to perform well, queried immediately after exposure, and tested in a controlled attention situation, the majority could recall very little.

There were also differences by medium. For example, on average, newspaper presentations were remembered best, but with only 31.02% of details recalled at even the lowest level of accuracy.

This was followed by computer presentations with a similar mean recall of 29.70%. Stories presented by television resulted in a recall of 27.50% of details. Finally, radio-presented stories resulted in a recall of only 25.88% of details. ANOVA reveals that the means for the media vary to a degree considerably beyond chance ($F = 5.39$; $p = .0012$). T-test analyses indicate that the means for newspaper vs the computer presentation did not differ significantly. The same was true of television vs radio. However, significant differences were found between the print media and the broadcast media. Stories presented via print were recalled at a significantly higher level than the same stories presented by television or radio. Detailed information concerning the statistical significance of these differences along with comparisons by story and gender have been reported elsewhere. (DeFleur. Davenport, Cronin & DeFleur, 1992).

By any measure or comparison, then, and regardless of the abilities and motivation of the audience or circumstances of exposure, leveling was very much in evidence. This finding is consistent with the prediction made in proposition seven in the theory.

Modal patterns of recall. The theory predicts that the information recalled from the news story by the subjects will be restated as a logical configuration of central and salient details. There is no simple way to check this prediction fully, short of displaying each recorded account. Obviously, every one of the 480 versions cannot be reproduced here. However, whether or not the theory predicted what happened can be answered in a preliminary way by re-constructing the "modal" version of each news story from the best remembered details recalled by the greatest number of subjects (mean accuracy of recall scores of 1.00 or greater). These modal patterns (see Figure 3) show not only what was best recalled but how it tended to be organized by the subjects. Moreover, these modal versions can be compared to the original news story.

## Figure 3

## MODAL STORIES
(Constructed from details best remembered by subjects)

### Fire Story

Warren James, a city employee, was arrested at his home Tuesday evening in connection with a fire that destroyed his boss's home, valued at $120,000. James, whose address is 35 Elysian Dr., had been dismissed from his job last night. A blond and slender man fitting James' description was observed leaving the scene. The boss, Terry Arlington, lost her collection of 19th century children's books in the fire. Twelve firefighters responded to the blaze.

### Drowning Story

A woman, whose car left the road and plunged into the Ontario River, may have suffered a heart attack. Norma Bernard, 65, of 12 Adams Street, worked for the Internal Revenue Service and was on her way to a surprise retirement party. During the past 10 years, two other persons have died along the same section of the road where there are no guard rails. At first, police thought she was alive, but suffering from hypothermia.

### Murder Story

Jeremy Hanna, 45, a local restaurant owner, was arrested Thursday night on Interstate 90 in connection with the murders of four family members. These included his brother, Thomas Hanna, eight-year- old Joshua, and six-year-old Jeffery. A third child is in critical condition. Police said Hanna became enraged when he discovered $5,000 missing from the restaurant account and assumed his brother took the money.

While there were many variations from one subject to another, most individual accounts had considerable similarity to these modal stories. Overall they were well-organized, leveled and sharpened versions of the original, with a number of examples of assimilation. In addition, the subjects' stories clearly identified and displayed the details that make up the "core" or heart of the story. Indeed, the degree to which the subjects' accounts contained the essentials of the story was considerable. This may add support to the idea that audience members are efficient processors of news information, rather than simply deficient because of low levels of recall.

A related question is whether there were qualitative differences in the kinds of details that were incorporated into these accounts. The theory suggests that those discussing settings, actors, events and consequences will influence the core details in the structure of the recalled story. One way of understanding the qualitative characteristics of details remembered from the stories is to organize those best recalled into categories based on the kind of information expressed in each.

The qualitative characteristics of the best-recalled details were classified by two coders working independently, each of whom was asked to sort all of the details in the original stories into one of six categories. The categories are: (1) Major details about central actors; (2) Core details of story events and consequences; (3) Minor details about central actors; (4) Minor/supporting details of story events and consequences; (5) unusual or dramatic details; and (6) details about minor actors. The coders then compared their work and reached consensus on the placement of any details with which they disagreed. Finally, mean accuracy of recall scores for each category were computed and are shown in Table 1.

Table 1 indicates, in a simple descriptive way, that when all stories and media are combined, subjects remember the major details about central actors best, followed closely by the core or essential details of story events and consequences. This is consistent with the "narration schema" concept and Gestalt principles. Minor details about central actors, or minor details of story events or consequences followed.

Table 1

CATEGORIES OF DETAILS REMEMBERED
(All Stories and Media Combined; N=480)

| Mean Accuracy Score | Detail Category |
|---|---|
| 1.055 | Major details about central actors |
| 0.999 | Core details of story events/consequences |
| 0.713 | Minor details about central actors |
| 0.641 | Minor/supporting details of story |
| 0.529 | Unusual/dramatic details |
| 0.452 | Details about minor actors |

Unusual or dramatic details, such as the "19th century collection of children's books" in the fire story or the fact that main actor in the murder story was arrested on "Interstate 90," often stand out in the recollections of the subjects, but not ahead of the major details about central actors or the core details of events and consequences. Details about minor characters are least remembered. The same pattern prevailed in an independent analysis of each story separately.

Selective recall of details. As noted earlier, the results of the analysis indicate clearly that in forming their Gestalt patterns of recall, and retelling the stories to the investigators, subjects did engage in sharpening. In each story, only a few details achieved a mean accuracy score of at least 1.00 or greater (on the 0 to 3 scale). In the fire story, for example, fourteen details were recalled with mean scores ranging from 1.048 to 1.810. This included such details as "a city employee was arrested," "his name is Warren James," and "fire destroyed his boss's home." These fourteen details were also recalled by the largest number of subjects (from 42% to 72.2%). In the drowning story, eleven details stand out as having been recalled better than others (mean scores of 1.042 to 1.772). In the murder story, fourteen details were recalled with mean scores ranging from 1.027 to 1.993. These details were recalled at those levels by as many as 83% of the subjects.

Conversely, leveling was clearly in evidence as the subjects formed their Gestalts. A large number of details were selectively dropped from the stories recalled by the subjects and passed on to the investigators. These were details receiving mean accuracy scores of .500 or lower--which means that almost none of the facts were recalled correctly. In the fire story, a total of fourteen details received such low scores. In fact, these were completely forgotten by as many as 92% of the subjects. This category included such details as "the name of the Fire Chief is Ed Wilson," "flames came out of the attic window," and "the fire started at about 10 a.m." In the drowning story, ten details received mean scores of .500 or lower and were completely forgotten by as many as 95% of the subjects. Finally, in the murder story, twelve details achieved the lowest accuracy of recall scores and were not remembered by as many as 97% of the subjects.

There is little doubt, then, that patterns of encoding and recall were highly selective. A limited list of details was recalled at least somewhat accurately by relatively large numbers of the subjects. However, many other details were ignored or forgotten by the majority. As predicted by the theory, then, leveling and sharpening appear to be clear patterns in the way these subjects encoded, recalled and retold these spot news stories.

Evidence of assimilation. Content analyses of 25 randomly selected accounts of each story were conducted to identify examples of assimilation--modifications of the news stories as these were reported to the experimenters by the subjects. It can be suggested that, as reported originally by Bartlett, these were due to their psychological sets or use of culturally familiar language. It was not difficult to identify a number of examples of assimilation. The following illustrate what happened:

In the fire story one subject reported that James, the alleged arsonist, was an "assistant to the mayor" (rather than to the Director of the Parks and Recreation department). The fire chief's name became Arlington (actually the name of James' boss). Another account indicated that James was "accused of arson" (in the story the police only "suspected arson"). In a change of gender, Ms. Arlington ( James' boss) became "Mr. Arlington." Finally, one subject indicated that "James had spent time in a mental hospital." (The story reported only that he was at the county mental center "undergoing psychiatric testing.")

In the drowning story, one subject indicated that Norma Bernard's "car went into a lake" (rather than the river). Still another reported that the car "went into Lake Ontario" (rather than the Ontario River). One account claimed that she "died of hypothermia" (rather than a heart attack). Even more colorfully, one account indicated that the car "skidded off a bridge that had no guard rails." As to guard rails, one subject reported that the "police would not comment on their absence." (Highway department officials were the ones who refused to comment).

In recounting the murder story, a number of examples were found. One subject reported that "four bodies were found around Interstate 90" (the assumed perpetrator was arrested on that highway, but the bodies were found in their home). One subject relocated the restaurant, indicating that it "is off Interstate 90" (as opposed to 62 Ontario Street). In another change, the $5,000 "was missing from the safe" (as opposed to the restaurant's bank account). In one case, the loud quarrel between Hanna and his brother took place "in the restaurant" (rather than via telephone). In another recalled story, "Hanna was arrested on four counts of murder" (a phrase from the subculture of TV police dramas and local news).

While these are not gross distortions, they offer clear examples of words, ideas and expressions that were assimilated into the story from psychological sets or culturally familiar language. Given the fact that the subjects in the experiment were college students in communication courses, and under the pressures for accuracy described earlier, one might anticipate that there would be relatively few such modifications. That does not appear to be the case, and the patterns of assimilation were very much a part of the news recall process in this experiment.

## Discussion And Conclusions

The overall conclusion from the data analysis is that at least some support was found for the theory. In controlled experimental settings, 480 subjects attended to one of three local spot news stories presented by one of four media. Immediately afterward, they were asked to recount the content of that news story. Content analyses of their reports show that the subjects did show the patterns of recall that are predicted by the theory. When called upon to relate what they had read, seen or heard, those subjects who could recall the stories with any dgeree of accuracy produced efficient and logical Gestalt configurations of central and salient details. While in an overall sense, what they remembered was quite limited--as has been the case in many studies of news recall--their versions contained core details about the major actors, the central events and their consequences as suggested by the concept of narrative schema. In addition, their accounts provided leveled and sharpened versions of the story with some evidence of assimilation, indicating perhaps that the concepts may be applied to the retelling of news stories. In short, the theory seemed to predict the ways in which these intelligent and motivated subjects attended to, learned, recalled and recounted the spot news stories under study.

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# VIEWER ELABORATION
# ABOUT NEWS VIDEO

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# VIEWER ELABORATION ABOUT NEWS VIDEO

## Abstract

Based on the Elaboration Likelihood Model by Petty and Cacioppo, a Model of Interactive Media Elaboration is proposed to experimentally test the relationships of the independent variables -- need for cognition, distraction, pacing (view time and pause time), and repetition – with the dependent variable, elaboration about nonlinear (interactive) video, measured by thinking aloud. Elaboration for linear and nonlinear video news stories was compared using a crossover design. Elaboration was greater for nonlinear video. Multiple regression analysis showed independent variables accounted for 47 percent of variability in elaboration. Pacing accounted for 29 percent. Multimedia authoring software was used to create the experiment and record events.

## Introduction

A person who watches television encounters a vast amount of information, but usually remembers little. This paper presents evidence that the linear nature of video constantly introduces new material that distracts viewers from thinking, or elaborating, about preceding material making cognitive processing of video difficult and incomplete. The same evidence demonstrates that interactive video allows viewers to elaborate more completely about video.

A number of studies explored the difficulties of remembering television news (e.g. Gunter, 1987; Robinson & Levy, 1986; Robinson & Davis, 1990). This study, however, moves a step earlier in the cognitive process and examines elaboration, a precursor to persuasion, as well as memory and learning (Anderson, 1990). To examine the impact of the video stream on elaboration, this experiment compares linear with interactive, or nonlinear[1], video. This study also examines how people control the pace of exposure to nonlinear video and the relationship of that pace with elaboration.

## Literature Review

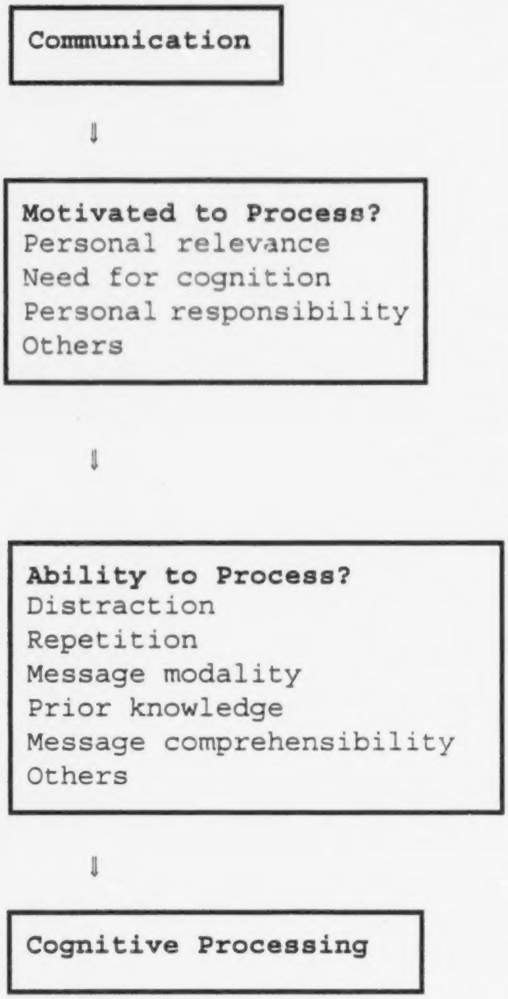
The theoretical model used to explain the relationships of these variables is called the Model of Interactive Media Elaboration (MIME). It adopts a portion of Petty and Cacioppo's (1986) Elaboration Likelihood Model (ELM). The MIME theorizes that an individual with the motivation to use an interactive medium will elaborate on its messages if able to do so. The MIME suggests that an interactive presentation enables more frequent elaborations for longer durations than a linear presentation when an individual is motivated to use content.

### Elaboration Likelihood Model

The ELM (Petty & Cacioppo, 1986) explains the ways persuasive communication may lead to changes in attitudes. Although the ELM deals with exposure to persuasive communication and its effects on attitudes, its principles can be applied to other purposes. This study uses some of its principles to examine the broader cognitive processes of the interactive media user. According to the model, elaboration varies depending on individual and situational factors that include an individual's ability and motivation to elaborate or cognitively process a message objectively. As ability and motivation decrease, people elaborate less and rely more on peripheral cues such as emotions or source credibility. As ability and motivation increase people process more centrally, rather than peripherally, eventually forming favorable or unfavorable thoughts. These thoughts can lead to cognitive structure change and eventually to relatively persistent changes in attitude. An accumulation of peripheral cues about a matter may also help establish a shift in attitude, but it is less stable than attitude change through the central processing route.

Figure 1

A Limited View of Petty and Cacioppo's (1986) Elaboration Likelihood Model.


Communication
Motivated to Process?
Personal relevance
Need for cognition
Personal responsibility
Others
Ability to Process?
Distraction
Repetition
Message modality
Prior knowledge
Message comprehensibility
Others
Cognitive Processing

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In central processing Petty and Cacioppo identified distraction and message repetition as factors affecting ability to process. Other variables that may affect ability to process are message complexity and clarity, message modality, and the intelligence or education of the recipient.

Among the factors shown to affect motivation are the personal relevance of a message, a person's responsibility for the message content, number of message sources, and a person's need for cognition.

The MIME at this initial stage of development takes into account only the central processing of the ELM, not peripheral processing. According to the MIME, individuals using interactive media process centrally -- that is, elaborate -- when motivated and able to do so. The model limits its focus to motivation and ability variables especially relevant to interactivity. The motivation variables are personal relevance and need for cognition.

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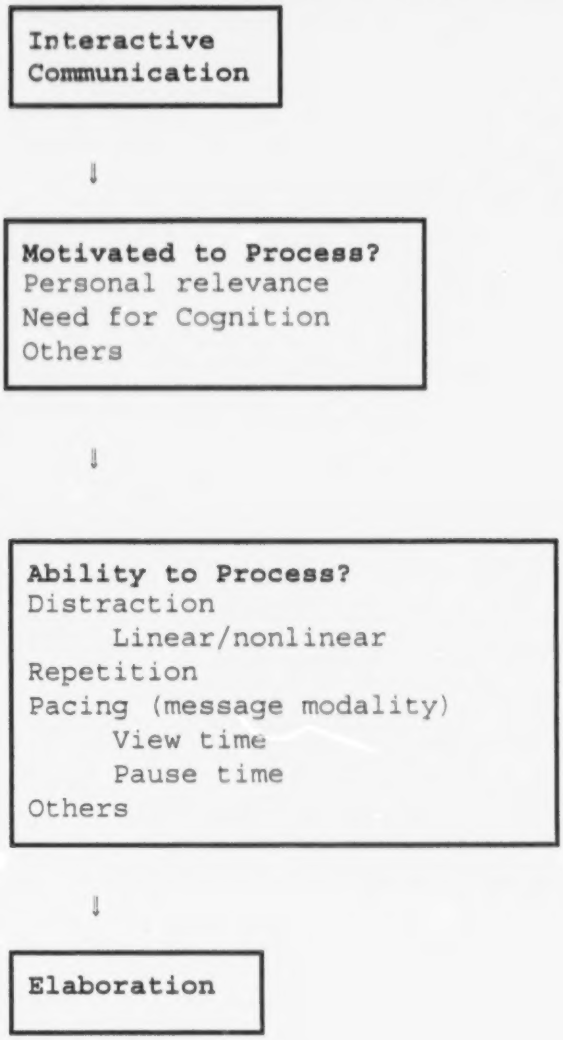
Figure 2

The proposed Relationships of Elaboration with Relevance, Need for Cognition, Distraction, Repetition, and Pacing in the Model of Interactive Media Elaboration (MIME).


**Interactive Communication**
**Motivated to Process?**
Personal relevance
Need for Cognition
Others
**Ability to Process?**
Distraction
Linear/nonlinear
Repetition
Pacing (message modality)
View time
Pause time
Others
**Elaboration**

The variables affecting ability to elaborate include distraction, repetition, and message modality. One of the ability variables, distraction, to be explained shortly, is inherent in linear video, but may not be present in interactive, or nonlinear, video. Repetition will be considered to affect the ability to elaborate. Message modality refers to the pace of presentation, more precisely measured by two other variables, pause time and view time, which will also be considered as independent variables affecting ability to elaborate. Logic also suggests that the longer a user chooses to view video, the greater the opportunity for elaborations; however, the length of the video can vary only in the interactive presentation. Finally, keep in mind that motivation and ability describe groups of variables contributing to elaboration. Motivation and ability are not variables themselves.

## Elaboration

Elaboration is a concept in cognitive psychology, education, marketing, and advertising, as well as media studies. Although its incorporation in theoretical models varies, there is much in common in the various definitions of elaboration. Petty and Cacioppo define elaboration as "the extent to which a person carefully thinks about issue-relevant information" (p.7, 1986). Greenwald and Leavitt (1984) identify elaboration as the highest of four "increasingly abstract representational levels" (p.591): preattention, focal attention, comprehension, and elaboration. Cognitive switching, the generation of counter arguments, is also strongly associated with elaboration (Petty & Cacioppo, 1986; McCain & Ross, 1979).

Elaboration plays a key role in cognitive psychology models about memory (Anderson, 1990). Generally when new information is remembered, it is associated with existing information in long term memory. These associations facilitate recall by creating links between the new information and the old. Later a person can use these links to recall information by inference or reconstruction. Generally, the greater the number and the higher the quality of elaborations, the better the recall.

In this study, elaboration is defined as the extent to which a person carefully thinks about information relevant to the content of a perceived media message. Elaboration is the dependent variable.

## Variables Affecting Motivation to Elaborate

Personal relevance and need for cognition are the two motivational independent variables in this study.

### Relevance

Petty and Cacioppo's (1986) work shows that personal relevance contributes to the motivation to elaborate. They define a personally relevant issue as one having intrinsic importance or significant consequences to the life of a person. They consider personal relevance similar to many conceptions of involvement. Involvement has even been defined as personal relevance (Greenwald & Leavitt, 1984).

### Need for cognition

As contrasted with relevance and the other independent variables that are situational, need for cognition is dispositional. It is an individual's tendency to engage in and enjoy thinking (Cacioppo & Petty, 1982).

Need for cognition has also been found to be related to television news viewing. Perse (1992) found that motivation for watching local news is associated with selective attention towards certain parts of a newscast.

Petty and Cacioppo (1986) found that "individuals low in need for cognition think less about persuasive communication than individuals high in need for cognition, and that this difference is due to the relative likelihood that individuals low in need for cognition will try to avoid effortful cognitive analysis of the incoming information" (p. 108). The suggestion is that individuals high in need for cognition should elaborate about news more than those individuals with relatively low need for cognition.

## Variables Affecting Ability to Elaborate

The remaining independent variables contribute to the ability of an individual to use an interactive medium. First the ELM concepts of distraction is discussed along with the argument that linear video is inherently more distracting than interactive, or more specifically nonlinear, video. Included is a deeper examination of the concept of interactivity. Then the discussion turns to the ELM concept of message modality, which is better described as pacing measured in terms of view time and pause time. Finally the ELM concept of repetition is discussed.

### Distraction

Distraction refers to phenomena that take attention away from a message. Petty and Cacioppo's (1986) studies show that distraction detracts from the ability to elaborate:

> Distraction disrupts the thoughts that would normally be elicited by a message.... Distraction should be especially important as a disrupter of message elaboration when people would normally be highly motivated and able to process the message. If motivation and/or ability to process the message would normally be low, distraction should have little effect (p. 67).

This study examines two categories of the distraction variable. One is the presence of distraction which this review argues is inherent in linear video. The other category is interactivity. This review argues that distraction is absent -- or at least greatly reduced -- in the interactive presentation of video.

Linear refers to the sequential presentation of audio and video. Distraction implies an unplanned or unintended interruption. In natural settings of media use, distraction can and often does come from external environmental sources such as people talking or household incidents. There are, however, internal distractions within the presentation of media content. Only the creators of linear media content can control these distractions. They are controlled by the arrangement and the pace of presentation of the content.

Research indicates the need for sequential continuity. Lang, Stickwerda, Sumner, Winters and Reeves (1991) showed that memory of subsequent related cuts of audio or video improved as compared with memory for unrelated cuts. Lang (1989) found that, as subjects listened to broadcast writing, they remembered it better if presented chronologically rather than in a traditional news writing format such as the inverted pyramid. She says traditional formats that point to the heart of a story followed by supporting information demand cognitive processing beyond what viewers are typically willing or able to expend. "In order to adequately process a news story in this manner, the viewer must immediately access what is already known while simultaneously processing the incoming information" (p. 442).

This and other evidence (Rossiter & Percy, 1983; Woodall, Davis & Sahin, 1983) suggest that distraction occurs even in most ordinary television viewing because the flow of visuals never stops. "It is actually better if the viewer looks away after an important frame or at least does not become distracted by novel pictures immediately following it." (Rossiter & Percy, 1983, p. 97).

"The visual and vocal cues on a television communication may actually 'distract' the receiver from paying attention to message contents, thereby reducing the effectiveness of a televised communication relative to a written one" (Gunter, 1987, p.22).

Opportunities to pause or slow down to reflect on story content should afford opportunities for elaboration (Davis, 1990; Levy, Robinson & Davis, 1986). As long as pauses are at natural episodic breakpoints (Boltz, 1992), increasing pauses should encourage better recall and presumably elaboration.

Interactivity substantially increases opportunities for the user, or viewer, to control the pace of presentation, to slow down or pause. However, interactivity often implies other interrelated characteristics, too.

In media research, interactivity has been an elusive concept. It has been considered a characteristic of a medium. For example, Heeter (1989) identified dimensions of interactivity: (a) the complexity of choice of information; (b) the amount of effort required to use a medium; (c) the responsiveness or degree to which a medium can respond to a user; (d) the potential of the medium to monitor its use; (e) the degree to which a user can add information to a system that an audience can access; (f) the degree to which a system facilitates interpersonal communication with another user.

Rafaeli (1988) classifies interactivity -- or at least exchanges sometimes called interactivity

-- into levels: (a) two-way (non-interactive) exchanges where one message follows another in time, but there is little other relationship; (b) reactive (quasi-interactive) exchanges where a subsequent message refers to a preceding message, and (c) fully interactive exchanges where a subsequent message refers to more than just the previous message, but also to broader aspects of the communication situation, especially other previous messages. Although this third kind of almost-human interactivity would be a worthwhile goal for the development of artificially intelligent interactive systems, it is beyond the scope of this study.

Keeping these views in mind, this study defines the broad concept of interactivity as a reactive human-computer communication that allows users (a) a varied, but finite choice of content, (b) control of the pace of presentation, and (c) opportunity to respond. More specifically, choice of content refers to the available segments of content (often categorized by topic), the order of their selection, and their granularity. Granularity refers to the level of detail of a particular content segment. For example, in news text, a headline is a course level of detail. A lead paragraph provides more detail. A full-length story provides great detail which is considered fine granularity. Control of pace of presentation may include control of the duration of the segments of a presentation, any repetition of content, and pauses between segments selected. Response to media content could include requesting more relevant content, saving content for later review, or communicating with a party related to the content such as its creator or a person mentioned in the content. The definition still allows for many possible variables.

Table 1

Elements of interactivity.

1. Choice of content
    a. Categories
    b. Order
    c. Granularity (level of detail)
2. Control of pace
    a. Duration of segments
    b. Pauses between segments
    c. Repetition
3. Opportunity to respond
    a. Save content for later review
    b. Choose additional content
    c. Communicate with related party

Rafaeli (1988) calls interactivity a modifiable property. This study will modify the concept of interactivity into a construct that helps simplify and isolate the elements of interactivity. The construct focuses on the second element in Table 1, the pace of presentation, which includes duration (view time), pauses, and repetition of interactive content. To distinguish between the broad concept of interactivity and the more narrow construct, it will be called nonlinear.

Distraction will be assumed to be present in linear media presentations, but absent in nonlinear presentations because pauses between segments allow the user to elaborate before viewing and hearing another segment.

Message modality

Petty and Cacioppo (1986) define message modality as a matter of pacing. They say, unless the message is simple, elaboration about television may be incomplete because the viewer lacks control of the pace of presentation. "In print, the recipient may process the message at an optimal pace, [emphasis added] stopping to consider difficult points and elaborating at will" (p.77). What happens if the recipient of the message sees television, but has control of the pace of presentation as if seeing printed text? The ELM and the MIME predict that such control of pace would permit greater elaboration. Two variables determine pace, the time a viewer pauses between video segments and the time a person spends actually viewing video segments.

Pause time. Because a nonlinear presentation allows users the opportunity to control pauses, it would be interesting to see whether users take advantage of the opportunities. If users do, will elaboration increase as pause time increases, as Rossiter and Percy (1983) and Levy, Robinson, and Davis (1986) suggest? Pause time is the time between video segments not spent viewing video segments. If a user takes more time to pause between video segments, it seems that, at least in most cases, the user uses the time to think about the preceding video segment. The fixed structure of linear video precludes any pause time. So pause time is considered only in the nonlinear condition.

View time. Media such as video or audio have duration as an inherent characteristic. They are fixed in time. Print media such as text and graphics have no inherent duration. They are fixed in space. Print conventions of chunking, levels of detail, or granularity are familiar. They include sentences, paragraphs, topic headings, and chapters. Virtually no familiar conventions exist for granularity in video (Laurel, Oren, & Don, 1992). Moving images can be divided only into shots and sequences, series of related shots edited together.

Therefore, nonlinear video in this study will still have duration as an inherent characteristic, but it will be reduced nearly to the sequence level with user-controlled pauses between sequences or small clusters of only a few sequences. The pauses should help avoid a new sequence interfering with elaboration about its predecessor. Locatis, Charuhas, and Bonvard (1990) advocate such a structure creating episodes and sub-episodes of less than one minute.

Logic suggests that the longer the duration of an exposure to content, the more the user would elaborate about that content. This duration of exposure to content will be called view time, an independent variable. View time is fixed in the linear condition and varies in the nonlinear condition. In the linear condition, view time is neither longer nor shorter than the given time of the video presentation, assuming the viewer is really watching the presentation. In the nonlinear condition, view time can vary. If the user skips a portion of video, view time may be shorter than the given time of the sum of all the video segments, or view time may even be longer if the user chooses to repeat portions.

Whether longer or shorter than the given time, view time becomes interesting as an independent variable. As view time increases, it seems reasonable to infer that the user is more interested in the content and elaborates more about it.

Repeat time. Moderate repetition may enhance elaboration, especially when additional opportunities are needed to process a message (Petty & Cacioppo, 1986). Excessive repetition may become tedious.

> The more complex, the more lengthy, or the more rapidly the message is presented, the more repetitions that may be necessary.... Conversely, the more familiar subjects are with the arguments or information in the message, the fewer repetitions that may be required to induce tedium or reactance (p. 70).

In the use of a nonlinear presentation, the user selects whether she needs repeated exposures, the number of exposures she needs, and the duration of each exposure. Again it seems reasonable to infer that if the user repeats video, she is elaborating more about it than if she did not repeat the video. Repeat time will be considered a subset of overall view time.

## Hypotheses

The first hypothesis tests the overall relationship between the motivation variable, need for cognition, and elaboration.

H1: Scores on a scale of need for cognition will correlate positively with the overall frequency of both linear and nonlinear elaborations.

The remaining hypothesis and research question examine the relationships between elaboration and variables affecting the ability to elaborate. The first independent variable, distraction, is dichotomous. The absence of distraction in the nonlinear condition should allow more elaboration than in the linear condition.

H2: Elaboration about news video will be significantly higher for nonlinear presentations than for linear presentations.

This second hypothesis does not explain why the relationship exists. A closer look at the variables of pause time, view time, and repetition in the nonlinear condition should provide more insight. This study anticipates that pause time, view time, and repeat time will contribute to elaboration about news video.

RQ1: For what proportions of variance in elaboration about nonlinear news video do need for cognition, view time including repeat time, and pause time account?

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Table 2

Summary of variables and their definitions.

| **Independent** | **Definition** | **Operationalized** | **Measurement** |
|---|---|---|---|
| Personal relevance | Intrinsic importance or consequences of content to a person | Subject's evaluation | Rating of topics |
| Need for cognition | Tendency to enjoy thinking | NC scale | Scale score |
| Distraction | Phenomena that take attention away from a message | Interference of video sequence with preceding sequence | Categories<br>1. Linear<br>2. Nonlinear |
| View time | Total duration of all video segments that a subject watches. | Time spent viewing video | Seconds |
| Pause time | Total duration of pauses between all video segments viewed | Time spent pausing between nonlinear video segments | Seconds |
| Repeat time | Duration of video viewed more than once | Time spent watching nonlinear video more than once | Seconds |
| **Dependent** | | | |
| Elaboration | Extent a user thinks about relevant content. | Number of content relevant thoughts identified in recording of thinking aloud | Frequencies per story presentation |

## Method

Two news stories were selected from a syndicated television news service as stimuli content for the experiments. Both featured topics of high personal relevance to the students subjects. Each story was presented to each subject in one of two forms, linear or nonlinear. Each subject was assigned randomly to one of four treatment paths in a crossover design as summarized in Table 2 (Kirk, 1996, p. 349).

Table 3

Summary of subject treatments.

| | | |
|---|---|---|
| 1. | Linear/Topic A (college costs) | Nonlinear/Topic B (credit cards) |
| 2. | Linear/Topic B (credit cards) | Nonlinear/Topic A (college costs) |
| 3. | Nonlinear/Topic A (college costs) | Linear/Topic B (credit cards) |
| 4. | Nonlinear/Topic B (credit cards) | Linear/Topic A (college costs) |

For uniformity, accuracy, and reliability a computer gave instructions and practice for the experiment, presented the stimulus materials, and recorded the durations of the view time, pauses, time spent repeating segments, and the order of content selection. To measure elaboration, the experiment used a "think aloud" technique (Shapiro, 1994; Genest & Turk, 1981). Subjects were encouraged to "talk back to the television" and "say what you really think about the presentation on TV." These comments were coded and counted as elaborations, the dependent variable.

Two groups of pilot subjects watched the presentations to help detect ambiguities in the presentation, to establish the relevance of the content of the stimuli stories, and to perfect procedures.

### Subjects

Subjects were 48 student volunteers from an introductory university mass media class given extra credit for participation in the study.

### Equipment

Subjects sat alone in a small room as they watched the instructions and experimental presentation on a 17-inch color computer monitor. The presentation, including the video news reports, was digitized and played from a striped array of hard disk drives connected to a microcomputer with a video capture/playback card. Video occupied about 80 percent of the screen (512 x 384 of 640 x 480 pixels) allowing a margin for a navigation button. Macromedia Director multimedia authoring software was used to create the presentation of instructions and stimuli. Subjects wearing a lavalier microphone listened to audio from the computer presentation using headsets. A videotape recorder recorded the audio from the subjects as they thought aloud.

Procedures

Subjects completed a NC scale in class and scheduled appointments to watch the presentation. As they arrived, they sat in front of the monitor wearing the microphone and headset. The computer presentation gave instructions and practice using a mouse and controlling video with an onscreen play/pause button and a slider. Subjects saw a demonstration of thinking aloud and practiced thinking aloud while watching a nonlinear video news story. After training and practice, subjects watched the stimuli video news stories.

Stimulus materials. An 18-item scale (Appendix A) used by Petty and Cacioppo (1986) measured need for cognition (alpha = .88).[2]

Subjects watched two television news reports with both narrated video and interview sections. Each story was constructed in both a linear and a nonlinear format. Each subject saw a nonlinear version of one story topic and a linear version of another. Both story topics were of high relevance to college students. One story topic was the marketing of credit cards on campuses. Its length was 101 seconds. The other story topic was rising college costs, 116 seconds. Both came from a syndicated news service, CNN Newsource. To assure relevance, 16 subjects in a pilot trial of the experiment rated the personal relevance of each story on a 5-point scale. Means were 4.35 for the credit card story and 4.47 for college costs.

Stories were edited and authored to be as identical as possible except for linear/nonlinear structure. The linear stories were presented with an opening screen listing the main sections of the story similar to the menu screen of the nonlinear version. Nonlinear stories were edited from linear stories such that the nonlinear segments, when added together, contained the same length and content of the linear stories. When broken into segments for the nonlinear version, breakpoints came as much as possible at natural episode boundaries (Boltz, 1992). The only differences between the linear and nonlinear versions was whether users could choose to see segments, how long they could view segments, and whether they could repeat segments. Users could choose which nonlinear segment to view first. However, the menu suggested an order consistent with the order in the linear version.

Recording. Each subject wore a microphone to record thinking aloud. A separate channel of the videotape recorder recorded the output of the audio from the computer in such a way that a coder could isolate a subject's voice, if necessary, and also determine where in the presentation the subjects elaborated. The audio recording included a control track that could be used to time the events recorded, as a backup or verification of the timing by the computer. Subjects listened to the computer using earphones to keep the audio from the computer presentation from interfering with the recording of thinking aloud. Pilot trials suggested that some subjects tended to speak louder when wearing earphones than when listening to the presentation over speakers.

An individual skilled in the Director scripting language, Lingo, was employed to create scripts to cause the presentation software to record data. These scripts created text files that recorded the answers to questions and the various times of events during the presentation, more specifically view time and pauses including time spent on menu screens and time spent using a slider. The presentation also recorded which segments subjects viewed and the order in which they were viewed.

Thinking aloud. Subjects were instructed to think aloud, that is verbally express the thoughts they had, as they watched the linear and nonlinear news video presentations. Elaboration likelihood research usually uses self-reports such as thought-listing (Petty & Cacioppo, 1986). A similar procedure, thinking aloud, has been successfully and repeatedly used in psychological (Ericsson & Simon, 1993) and media studies (Shapiro, 1994). It is also a widely used to test computer software (Nielsen, 1992). Thinking aloud, especially the recording of a continuous monolog, is one of the few ways to ascertain whether an individual has elaborations and the number of elaborations. Nevertheless the thinking aloud method has limits. Such self reports may be incomplete, irrelevant, and subject to distortions. There is also a danger that they might alter the cognitive processes being studied. In thorough discussions of these and other issues of using thinking aloud, Ericsson and Simon (1984) and Genest and Turk (1981) recommend audiotape recording subjects' continuous monologue as an unobtrusive way of gathering data from thinking aloud. Subjects simply say what they think as they watch. The audio tape captures the thoughts with as little interference as possible. There is still a danger of responses being incomplete or interfering with the task of viewing the media presentations, but audio taping minimizes that danger requiring subjects only to verbalize what they think as they think it. They are required to use only short-term memory. Appropriate coding can detect and eliminate irrelevant thoughts.

Coding Elaborations. The unit of analysis was naturally occurring segments identified by coders according to phrasing, inflection, and changes in content (Genest & Turk, 1981). Only elaborations relevant to the content of the video news stories were counted. Pilot trials indicated that the length of the elaborations varied considerably from one-word exclamations to complex sentences and occasionally even multiple sentences. To monitor the length of elaborations and their richness for descriptive purposes, relevant elaborations were classified into one of three categories. The first category was exclamations. These were one or two word reactions such as "wow" or "yes." The second category was called comments. These were short, but complete sentences such as: "I didn't know that." "That's the truth." "I have too many credit cards." The third category was called rich comments. These were either multiple sentences or complex/multi-clause sentences that showed thought beyond the facts of the story, especially reactions, qualifications, or examples (Cacioppo & Petty, 1981).

## Results

An alpha level of .05 was used to determine whether to accept or reject statistical hypotheses.

Table 4 shows a descriptive summary of selected results.

Table 4

Selected Statistics Describing Elaboration about Linear and Nonlinear Video.

| | Minimum | Maximum | Mean | Standard Deviation |
|---|---|---|---|---|
| Linear Elaborations | 1 | 18 | **7.87** | 4.16 |
| Exclamations (linear) | 0 | 10 | 2.60 | 2.33 |
| Comments (linear) | 0 | 15 | 4.65 | 3.37 |
| Rich (linear) | 0 | 3 | .67 | .91 |
| Nonlinear Elaborations | 2 | 26 | **9.44** | 6.44 |
| Exclamations (nonlinear) | 0 | 9 | 2.96 | 2.18 |
| Comments (nonlinear) | 0 | 19 | 5.33 | 4.46 |
| Rich (nonlinear) | 0 | 6 | 1.12 | 1.61 |
| Total Elaborations(linear and nonlinear) | 5 | 38 | 17.31 | 9.26 |
| Need for Cognition (possible score 80) | 39 | 68 | 55.31 | 7.491 |

n = 48

### Need for Cognition and Elaboration

Analysis of H1 was a simple Pearson correlation comparing the raw scores on a scale of need for cognition with the frequency of all elaborations, both linear and nonlinear. There was no significant correlation ($r = .17$; $p = .12$, one-tail). H1 could not be supported by this test.

### Elaboration about linear vs. nonlinear video

The second hypothesis tested the fundamental relationship of the study between the number of elaborations about linear video news with the number of elaborations about nonlinear video news. Analysis for H2 compared means using a simple t-test for dependent, or paired, samples. The comparison supported the hypothesis with $t(47) = 1.92$, $p < .03$ (one-tail).

Examining the individual categories of elaborations, there were no significant differences between the number of linear and nonlinear exclamations, nor between the number of linear and nonlinear comments. There were few rich elaborations (linear mean of .67), but significantly subjects had twice the number of rich elaborations about the nonlinear videos than about the linear videos ($t = 2.16$, $p < .04$).

Table 5 shows the differences between linear and nonlinear elaboration become more striking upon examination of only those subjects who chose to watch all nonlinear segments.

Table 5

Statistics Describing Elaboration by Subjects Who Watched All Segments of Nonlinear Video.

| | Minimum | Maximum | Mean | Standard Deviation |
|---|---|---|---|---|
| Linear Elaboration | 1 | 18 | **7.57** | 4.38 |
| Exclamations (linear) | 0 | 10 | 2.54 | 2.31 |
| Comments (linear) | 0 | 15 | 4.60 | 3.54 |
| Rich (rich) | 0 | 2 | .46 | .61 |
| Nonlinear Elaboration | 2 | 26 | **10.97** | 6.50 |
| Exclamations (nonlinear) | 0 | 9 | 3.57 | 2.15 |
| Comments (nonlinear) | 0 | 19 | 6.06 | 4.68 |
| Rich (nonlinear) | 0 | 6 | 1.31 | 1.71 |

n = 35

In this case again the difference between overall means is, of course, significant with t (34) = 4.34, $p < .001$, one-tail, but all, rather than just one, of the means between each category of nonlinear elaboration are significantly different (exclamations t = 3.50, comments t = 2.70, rich t = 3.58; all $p < .01$, one-tail).

Timing and elaboration

The first research question examined only elaboration about nonlinear video as the dependent variable and several continuous independent variables. A multiple regression equation was used to calculate the variance contributed by each of the independent variables and yielded the following standardized ($\beta$) coefficients:

$$Y = .205\,X_1 + .401\,X_2 + .056\,X_3 + .335\,X_4 + e$$

Only coefficients for $X_2$ (view time) and $X_4$ (pause time) were significant at the .05 level. Also, both in theory and measurement the independent variables correlate with each other. Repeat time was a subset of view time and pause time could be influenced by view time.

To test the contribution of each independent variable to nonlinear elaboration, each was removed from the full regression equation model above to form four restricted models. Each restricted model was compared to the full model to generate an F statistic to determine whether the removed independent variable contributed significantly more than the others at an .05 level of significance. Reduction in $R^2$ was calculated for each model to indicate the proportion of variance contributed by each independent variable.

Table 6 shows that view time produced the greatest reduction in $R^2$ (.108) followed by pause time (.051) and NC (.040). Reduction from NC and repeat time was not significant. The sum of the individual contributions, however, fell far short of accounting for all independent variables together (overall $R^2 = .472$).

Table 6

Summary of Regression Analysis of the Contribution of Need for Cognition, View Time, Repeat Time, and Pause Time to Elaboration about Nonlinear Video[3].

| Model | df | $R^2$ | Reduction in $R^2$ | F |
|---|---|---|---|---|
| Full | 4, 43 | .472 | | 9.614* |
| Restricted, testing NC | 1, 43 | .432 | .040 | 3.257 |
| Restricted, testing viewing time | 1, 43 | .364 | .108 | 8.780* |
| Restricted, testing repeat time only | 1, 43 | .470 | .002 | 0.163 |
| Restricted, testing pause time | 1, 43 | .421 | .051 | 4.153* |

* $p < .05$

In similar same fashion to test the contribution of pairs of variables for interactions, individual pairs were removed from the full regression equation model to form four restricted models. Each restricted model was compared to the full model to generate an F statistic to determine whether a pair contributed significantly. Reduction in $R^2$ was again calculated for each model to indicate the proportion of variance contributed by each pair of independent variables.

Table 7 indicates that pairs of variables led to significant reductions in $R^2$, especially the combinations of pause time/repeat time, pause time/NC and most of all view time/pause time, the two variables identified in Chapters 2 and 3 as defining the concept of pacing.

Table 7

Summary of Regression Analysis of the Contribution of Pairs of Variables to Elaboration about Nonlinear Video.

| Model | df | $R^2$ | Reduction in $R^2$ | F |
|---|---|---|---|---|
| Full | 4, 43 | .472 | | 9.614* |
| Restricted, testing NC and view time | 2, 43 | .341 | .131 | 5.334* |
| Restricted, testing NC and repeat time | 2, 43 | .432 | .040 | 3.257* |
| Restricted, testing NC and pause time | 2, 43 | .368 | .104 | 4.235* |
| Restricted, testing view and repeat time | 2, 43 | .363 | .108 | 4.438* |
| Restricted, testing view and pause time | 2, 43 | .184 | .288 | 11.727* |
| Restricted, testing repeat and pause time | 2, 43 | .376 | .096 | 3.909* |

* $p < .05$

## Discussion

The results of the experiment support most of the Model of Interactive Media Elaboration (MIME), especially notions about the roles of internal distraction and pacing. Subjects elaborated significantly more about nonlinear news presentations than they did about the linear stories with the same content. It also appears that as the elements of pacing (view time and pause time) increased, subjects elaborated more about news video. Altogether, the independent variables of need for cognition, view time, and pause time accounted for nearly half the variability in elaboration.

Results failed to support the first hypothesis that there was a positive correlation between need for cognition (NC) and elaboration. The lack of a significant correlation here may be more a shortcoming of method than theory for at least two reasons. First, this result does not benefit from the repeated measures control for individual differences because it simply compares the overall association between need for cognition and elaboration. Individuals especially inclined or disinclined to think aloud would tend to obscure this correlation. Second, there may have been too little variability in NC to detect. The subjects in this experiment were relatively homogeneous -- all underclass college students with similar majors. NC scale scores fell between 39 and 68 out of a possible 80 (see Table 4).

The second hypothesis did, however, predict the fundamental finding of the study -- a significant difference between the means for elaborations about linear video and nonlinear video. The result is more meaningful when one considers that when subjects watched linear video they were forced to watch an entire story. When they watched nonlinear video they were free to watch less than the entire story. More than one-fourth, 13 out of 48, chose to watch less than the entire nonlinear story. Nevertheless, despite those who watched only a portion of the nonlinear stories, there was still significantly more elaboration about the nonlinear stories than about the linear stories.

If only the subjects who watched all nonlinear segments are considered, the difference between linear and nonlinear elaboration is much greater (compare Tables 4 with 5). This result seems to underscore the notion that those who are motivated will take the opportunity to think about content, if it is presented in a nonlinear fashion.

Even more striking are the results about the quality of the elaborations. Although the number of rich elaborations was relatively small, they doubled (Table 4) or tripled (Table 5) for the nonlinear video. It is clear that when people elaborate more about nonlinear video, the greatest increase comes in the richness or quality of elaborations. This finding is important because beyond the amount of elaboration, it is the depth of processing (Craik & Tulving, 1975) or the quality of elaboration that is crucial to memory (Anderson, 1990; Mayer, 1980). This evidence is also consistent with the notion of central processing in the Elaboration Likelihood Model (Petty & Cacioppo, 1986).

The research question explored the elements of interactivity to determine why there is a difference. It examined the contributions of NC, view time, repeat time, and pause time to elaboration. Together they accounted for nearly half of the variance in elaboration ($R^2 = .472$).

Alone, the contribution of NC was small, possibly because of limited the variability described earlier. The contribution of repeat time was not significant, probably because few subjects chose to repeat. Individually, both view time and pause time contributed significantly to elaboration, but in combination they accounted for 29 percent of variance in elaboration. It is clear that pacing, defined as view time and pause time, has an important role in elaboration about nonlinear video.

## Limits

The experimental methods used in this study gave the investigator great control over influences that might have confounded results. However, because the experiment was conducted in a controlled situation using only college students, the validity of generalizing results to home viewing is limited.

The study used thinking aloud to measure elaboration. This is one of the few methods available to measure what and how much people think, especially as they watch video. Nevertheless, the measurement is crude and subject to omissions, interferences, and distortions. A few pilot subjects in this study even commented that thinking aloud challenged them to pay extra attention. Others said thinking aloud was natural for them; they often thought aloud at home when they watched television. Fortunately, the experiment's crossover design controlled for these individual differences. They are evident in the great deviations about the means (Table 4). Careful recording and coding minimized other difficulties with thinking aloud (Ericsson & Simon, 1993; Genest & Turk, 1981).

## Contributions

Despite limits, this study contributes to both the theory and the methodology of the ways people use and think about media content. In many ways the methods developed for this experiment facilitated the theoretical contributions. For example, the computer presentation of digitized video enabled the fundamental contrast between linear and nonlinear video in a controlled way that would otherwise be difficult.

The computer administration of the experiment also helped assure its reliability and validity. A computer's uniform presentation of instructions, demonstrations, practice, and stimuli almost eliminates traditional uniformity problems that arise when humans administer experiments. Uniform presentation helps avoid the instrumentation threat to internal validity and treatment implementation reliability threats to statistical conclusion validity (Cook & Campbell, 1979; Campbell & Stanley, 1966).

The primary results of the experiment have two strong theoretical contributions. One sheds light on the nature of an older medium, television. The other increases knowledge about a new medium, interactive video.

First, about the linear nature of television, the results confirm theory suggesting that linear video itself interferes with thinking about linear video content. Subsequent video scenes distract viewers from thinking about preceding audio and video because viewers cannot control pacing. Although several scholars recognized this problem (Gunter, 1987; Rossiter & Percy, 1983; Woodall, Davis & Sahin, 1983), none has demonstrated it this clearly by creating a contrast condition which does not ordinarily exist -- nonlinear video. The experiment then controlled for content, individual differences, and relevance to minimize any rival explanation other than the linear flow of stimuli as the reason for the lower quantity and quality of elaboration about linear video.

Second, the results demonstrate the likelihood that nonlinear video will enable more, higher quality elaboration than traditional linear video. Although more and higher quality elaboration is not necessarily sufficient for memory or attitude change, the ELM and other cognitive theories show that elaboration is necessary for such cognitive processes.

Despite more than 15 years of writing about the problems of learning from television news, the only solution for improving its cognitive processing had been to make it easier to process (Davis, 1990; Lang, 1989), or a cynic might say to "dumb down" the news.

> To improve learning and memory for information in newscasts, we must either increase level of effort expended by viewers or change the newscasts so that less effort is required to process them. Obviously, the broadcaster cannot control the effort being expended by the viewers, but he or she might create newscasts that are easier to process. (Lang, 1989, p.442)

The results of this research demonstrate that both choices are tenable. Television news does not necessarily have to require less from viewers but can give viewers opportunities to think more. Interactivity is a tool that can actually leverage the effort expended by viewers, if they are motivated to use the tool.

At this point the reader might wonder whether interactive video is technologically possible. Large scale interactive television trials have been conducted in recent years in Orlando, Florida, and Reston, Virginia, among other places, using two-way cable television or wide bandwidth telephone lines (Zollman, 1997). The World Wide Web already delivers video in limited degrees. Cable modems or wide bandwidth phone lines hold potential for more interactive video news on the World Wide Web (Murrie, 1995).

Another theoretical contribution of this study is that it establishes a relationship between elaboration and pacing, as measured by view time and pause time. The relationship between pacing and cognitive processes had been studied for traditional, linear television (Frost, 1994; Gunter, 1987), but the definitions differed from this study in that linear television has no viewer controlled pauses. These pauses open a new dimension for the application and research possibilities of video pacing.

The discovery of the association between pacing and elaboration in this experiment has implications beyond the relationship of the variables alone. It is a step towards using interactivity to study cognitive processes. Scholars have written about the possibility of using new media to provide insight into cognitive processes (Slee, 1989; Biocca, 1992), but relatively few studies have gone beyond simple comparisons. This study measured elaboration and elements of interactivity to gain insight into cognitive processing of the complex stimuli from media.

The final contribution is more applied than theoretical. The experimental design, the equipment configuration, and the software used in this study enable an investigator to simulate and test qualities of new video media still under development. Additional tests could examine presentation formats that would be most suitable for viewers of both linear and nonlinear video formats of advertising, entertainment, and other content in addition to news.

Recommendations

Because it explores a new area, this study raises more questions than it answers, of course: Would similar results be found under real world conditions in a home? Would viewers use other kinds of video content such as commercials or drama in the same ways they used news in this study? Would the results be similar for other media fixed in time, such as audio only? Would results differ with different subjects such as retired adults, middle aged adults, or children? These are the kinds of questions about generalizing results that could be raised about any experiment. In addition this study presents some unique opportunities for additional research.

The independent variables accounted for nearly half the possible variance in elaboration. Such results are a good beginning, but they suggest that there are yet more variables to identify and associate with interactive elaboration. Additional variables may include elements in Table 1 such as content category selection, but likely are yet to be discovered.

Development of applications. An unanswered practical question concerns the ideal length for an interactive video segment. What is the best way to define an optimum size for a segment? Do shorter segments of 10 to 15 seconds generate more elaboration than longer segments of 30 to 45 seconds? What role should the nature of content play in determining the optimum length? The experience with this study seems to favor the shorter segments, but this should be tested.

The news stories in this experiment were, as are most television news stories, designed to be viewed linearly, the inherent structure for media fixed in time. Television news instruction and production have gone to great lengths to devise structures and techniques to effectively present stories linearly (Yoakam, 1989). In one sense, it is an artificial exercise for an experimental comparison to separate a television news story into nonlinear segments. The television news story was designed to be viewed linearly. Division into nonlinear segments potentially ruins any continuity designed into the story.

The interesting and practical question for future research and development is: Are there ways to design nonlinear video presentations to take advantage of the inherent characteristics of interactivity to enhance elaboration, and perhaps learning, understanding, or persuasion, and still retain desirable characteristics of audio and video?

Here are some possibilities consistent with this research:

1. Tell stories in brief episodes or sub-episodes, perhaps in some cases as short as 10 or 15 seconds. These episodes do not necessarily need to have all the background and detail of a linear story. Background information about a person or place can reside on a hypertext or hypervideo link.
2. Video should include a control mechanisms, such as the onscreen slider used in this experiment, to allow viewers to pause and repeat.
3. Merge the advantages of text with video. Perhaps a window of text running parallel with narration and visuals should be part of the video news story. A text window might facilitate a viewer's convenient and quick return to a specific phrases, sentences, or scenes. A viewer should also be able to scan a story as a reader skims text.
4. Simple maps of a story, much like flow charts or Web site maps, might be superior to traditional

menus. In this study few subjects deviated from the suggested menu order. A map that avoided suggesting an order might facilitate more browsing. A map might help the viewer navigate the story without becoming disoriented. Such maps could also facilitate skimming by giving video the granularity of text.

5. Narration could be faster. Viewers will be less patient with long irrelevant narratives. If a viewer wants to review a section, the slider would make such review convenient.

6. Reduce traditional linear sequence editing, such as wide shot, medium shot, closeup. Recognition would be more important than linear continuity, for the interactive news story. Ideally a video news story would show high definition wide shots and allow viewers to select areas to see closeups.

7. Make more use of simultaneous presentations such as split screens. Multiple views of the same event or a story located at more than one place at a time would be especially appropriate.

8. Make liberal use of animations that can be repeated to represent events, relationships, and certain concepts. For example, an animation could synthesize investigators' findings about an airliner crash. The animation would show the position of the airliner as it spun out of control. Key events such as comments from the cockpit would link to appropriate points in the animation. Viewers could review and repeat the animation.

Presentation possibilities such as these may just appear to be novelties, but their potential goes beyond clever appearances. They have the potential to improve elaboration which may be useful for commercial and political persuaders. Beyond persuasion, improvements in media presentation may contribute to social ideals such as better learning and understanding of public affairs.

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[1] The term interactivity in this study refers to a broad theoretical concept. The term nonlinear refers to the specific construct of interactivity in this particular experiment.

[2] The alpha of .88 comes from Batra and Stayman (1990). For more detail about the administration of this and similar scales and their reliabilities see: Batra and Stayman (1990); Bruner, G. (1992); Cacioppo & Petty, (1982); Cacioppo, Petty, and Kao, (1984); Petty and Cacioppo, (1986); Perse, (1992).

[3] F was calculated using equivalency of F test formula from McNeil, Newman, and Kelly (1996, p. 111):

$$F_{(m1-m2,\,N-m1)} = \frac{(R_f^2 - R_r^2)/(m1-m2)}{(1-R_f^2)/(N-m1)}$$

Where *m1* is the number of "pieces of information" in the full model, *m2* is the number of pieces of information in the restricted model. *N* is the number of subjects.

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# Appendix A

## Need for Cognition

Rate these item based on the extent to which the statements are characteristic or uncharacteristic of you (5-strongly characteristic, 4-characteristic, 3-don't know, 2-uncharacteristic, 1-strongly uncharacteristic). There are no correct or incorrect answers. * indicates reverse scoring.

1. ____ I really enjoy a task that involves coming up with new solutions to problems.

2. ____ I prefer a task that is intellectual and difficult and important rather than a task that is somewhat important but does not require much thought.

3. ____ I usually end up deliberating about issues even when they do not affect me personally.

4. ____ *Learning new ways to think doesn't excite me much.

5. ____ The idea of relying on thought to make my way to the top appeals to me.

6. ____ The notion of thinking abstractly appeals to me.

7. ____ *I like tasks that require little thought once I've learned them.

8. ____ I like to have the responsibility of handling a situation that requires a lot of thinking.

9. ____ *I feel relief rather than satisfaction after completing a task that requires much mental effort.

10. ____ *I only think as hard as I have to.

11. ____ *I would rather do something that requires little thought than something that is sure to challenge my thinking.

12. ____ *I find satisfaction in thinking hard for a long time.

13. ____ Thinking is not my idea of fun.

14. ______ *I try to avoid situations where there is a good chance that I will think hard about something.

15. ____ I enjoy solving puzzles.

16. ____ *I prefer to think of small daily projects rather than long-term projects.

17. _____ I prefer complex to simple problems.

18. ____ *It's enough for me that something gets the job done. I don't care how or why it works.

# UNDERSTANDING DELIBERATION: THE EFFECTS OF DISCUSSION NETWORKS ON PARTICIPATION IN A PUBLIC FORUM

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# ABSTRACT

Participation in a deliberative forum has received relatively little scrutiny as opposed to traditional forms of participation, such as voting or contacting an official. This study examines the role of individuals' discussion networks in predicting their willingness to participate in a deliberative forum. Using data collected from a midwestern city in the fall of 1997 (n=416), we employed structural equation modeling techniques to examine a provisional model of public deliberation. This model identified two pathways linking network characteristics to participation in a deliberative forum. First, a *behavioral* pathway from network heterogeneity directly to forum participation suggests that membership in a diverse discussion network ensures exposure to various perspectives and ways to deal with these viewpoints, and ultimately translates into forum participation. A second, *reflectional*, pathway emanates from network size. A greater number of discussion partners makes frequent discussion of issues more likely. This discussion stimulates local media use which leads to reflection about local issues which, in turn, enhances forum participation. Normative implications related to this study are addressed.

# UNDERSTANDING DELIBERATION: THE EFFECTS OF DISCUSSION NETWORKS ON PARTICIPATION IN A PUBLIC FORUM

De Tocqueville (1835/1969) presupposed that direct participation, or face-to-face interaction, makes a nation democratic. In other words, interaction among citizens is the foundation for representative institutions, federalism, and democracy (Pitkin & Shumer, 1982).

From the Greek polis to the contemporary town hall meeting, the role of deliberation among citizens has long been a key element of democracy. For Aristotle, a collective decision based on deliberation was better than one made individually by even the best of individuals (Allan, 1963). However, unlike the Greeks who excluded women, slaves, and others from participating in public deliberation, modern democracy attempts to be more inclusive via public forums that ideally exclude no one (Dewey, 1927/1991; Sanders, 1997) and encourage "the entry of the greatest possible number of social actors, both individual and collective, into decision making" (Touraine, 1997, p. 25).

Deliberative public forums have become institutionalized through modern town hall meetings (e.g., Burke, 1994; Fishkin, 1996; Yankelovich, 1991) and cyberspace forums. These deliberative forums allow for the exchange of information and opinions on two levels. First, citizens who are interested or affected by an issue can exchange information with other equally interested citizens. Second, and more importantly for democratic processes, town hall meetings give citizens an opportunity to directly affect policymaking through an exchange of ideas with policymakers. While mail or phone calls to public officials can be an effective way to communicate individual opinions and ideas, the venue of a public forum offers the opportunity for greater two-way interaction, debate, and exchange of ideas.

The ideal of a deliberative forum, however, may not translate easily into practice. Like more traditional forms of participatory behavior, such as voting or donating money to a political campaign (Verba & Nie, 1972), taking part in a deliberative forum may be biased toward individuals of certain socioeconomic strata. While there is a vast body of literature on traditional forms of participation, deliberative participation as a crucial component of democracy has received relatively little scrutiny (Gastil, 1994; Merkle, 1996; Page, 1996).

This study examines one specific form of public deliberative participation: citizens' willingness to participate in and speak up at public forums. Participation in forums is distinctively different from what previous research has labeled traditional forms of participation (e.g., McLeod et al., 1996; McLeod, Scheufele, & Moy, 1997a). Traditional forms of participation are rooted in primarily homogenous networks, and those who engage in these participatory acts often have been recruited by members of these networks (Rosenstone & Hansen, 1993; Verba, Schlozman, & Brady, 1995). Participation in a public forum, on the other hand, involves interaction with a heterogeneous group, or others who tend to be unlike oneself and to hold different opinions.

Grounded in research on contextual effects and the impact of social networks, this study examines the role of individuals' personal networks in predicting their willingness to participate in deliberative forums. The study proceeds in three steps. First, we explicate key concepts to avoid the terminological and conceptual inconsistencies that characterize much of the previous research. In a second step, we examine a provisional model of public deliberation, testing it with survey research data collected in the fall of 1997. Finally, we discuss the implications of our findings for local politics and community decision-making.

## THE PROCESS OF DELIBERATIVE PARTICIPATION

By allowing citizens to participate, and to make personal decisions that benefit the greater public, public deliberation links individual level and aggregate level processes. At the individual level, each person deliberates by reasoning internally, weighing the issues, and selecting appropriate arguments to make. This process involves "the formation of the [individual] will, the particular moment that precedes choice, and in which the individual ponders different solutions before settling for one of them" (Manin, 1987, p. 348). Individuals also can become more educated through the information learned prior to and during attendance at public deliberative forums.

Deliberation at the aggregate level involves the blending of diverse opinions among groups of individuals and interest groups, and compromises among conflicting points of view. It allows people to sort out and reduce the number of issues and dimensions that they disagree upon (Knight & Johnson, 1994). They do this through persuasive argument, evidence, evaluation, and discussion (Gutmann, 1993).

### The Role of Social Context

Scholars studying the process of political participation have pointed to the importance of the context within which participation occurs (Huckfeldt, 1986; Huckfeldt & Sprague, 1995; Knoke, 1990a, 1990b; Putnam, 1966). These contextual variables are conceptualized as external social factors which play a role in an individual's political participation (Huckfeldt, 1979).

As noted earlier, this study examines the role that various network characteristics play in predicting individuals' willingness to participate in deliberative forums. We do not attempt to answer such questions as how specific types of networks develop or to what extent people belong to multiple, overlapping networks. Rather, we address characteristics of individuals' primary political discussion networks, how they are influenced by demographics, and how they in turn influence the process of deliberation. Two characteristics of social networks are relevant to this study of deliberation: network *size*, or the number of discussants one has; and *heterogeneity* of networks, or the degree to which differences exist in a given network (Leighley, 1990).

## SIZE AND HETEROGENEITY OF NETWORKS

### Demographic Antecedents

What factors determine how large or heterogeneous one's social network is? Analyses of General Social Survey data reveal that the size and heterogeneity of personal networks are greater among the young and well-educated (Straits, 1996). Similarly, Burt (1990) found that better educated individuals were more likely to include people they meet less frequently as members of their personal networks. Recent research shows that females, more educated respondents, younger respondents, and the more affluent tend to have more heterogeneous networks (McLeod, Sotirovic, & Holbert, 1997c).

### Pathways to Participation

Do characteristics of an individual's network influence his or her willingness to attend and participate at deliberative forums? We posit two distinct pathways to participation, one emanating from network size and the other from network heterogeneity.

It is necessary to differentiate between network size and network heterogeneity. Although the size of a network is often assumed to be a rough estimate of the heterogeneity of that network, size should be regarded as a necessary but not sufficient condition for diversity. In other words, larger networks are not necessarily more diverse. Given this possibility, size of a network and the relative heterogeneity of that network need to be examined separately.

Research on the influence of the mere size of one's discussion network on participation is scarce. Leighley (1990) is one of the few scholars to examine this relationship. In defining the theoretical importance of network size, she writes:

> As the size of an individual's discussion network increases, the probability of being exposed to other individuals who are politically active also increases; individuals with larger discussion networks are hypothesized to be more likely to participate themselves (p. 463).

Her study finds partial support that network size influences exposure to opportunities to participate.

The heterogeneity of a given network also may affect participation in that members of more heterogeneous discussion networks are more likely to participate in deliberative forums. This reasoning is based on the assumption that a heterogeneous discussion network increases a person's likelihood of confrontational encounters with other members of the network (Krassa, 1990). Individuals in heterogeneous networks are simply more accustomed to encountering opposing points of views and therefore are less intimidated by the idea of engaging in public discussion with others. MacKuen (1990) offers an alternative interpretation of this relationship. He posits that individuals tend to exercise conversational choice, and decisions to discuss politics are based in part on the likelihood of encountering similar or dissimilar viewpoints.

Thus, the size and heterogeneity of one's network can influence participation in a deliberative forum. It is important to note that the processes linking these two variables to participation in public forums are not mutually exclusive. Both may involve communication. In other words, interpersonal discussion of issues and mass media may serve as both sources of information and providers of arguments and counterarguments.

### Mediating Variables

Three key variables -- interpersonal discussion of issues, local public affairs media use, and reflection -- fit into two pathways that we label behavioral and reflectional pathways. A behavioral pathway originates from the heterogeneity of people's networks. An reflectional pathway has its origin in the size of people's networks. Conceivably, each of the three variables -- interpersonal discussion of issues, local public affairs media use, and reflection -- may mediate the effects of network size and heterogeneity on participation in a deliberative forum.

*Discussion of Issues.* As noted earlier, an increase in network size will lead to a greater likelihood of interaction with those who are politically active (Leighley, 1990). However, even politically inactive individuals will come into contact with informal opinion leaders, who play an important role in how one receives information about politics (Campbell, Converse, Miller, & Stokes, 1960). Although these opinion leaders may come in diverse forms (e.g., the political pundit of a work group or a well-informed neighbor), they share a common social characteristic of engaging in political communication. As an individual's personal network expands, there is bound to be an increase in the number of interactions the individual has with those informal opinion leaders who are willing participants in any and all political discussions.

Where the influence of network heterogeneity on interpersonal discussion of issues is concerned, research reveals that social structure provides the framework for choosing discussion partners (Marsden, 1990). If, as Blau (1977, p. 22) notes, "associations with people who have different backgrounds and experiences are likely to make people more tolerant, broaden their horizons, and provide intellectual stimulation," then we may reason that heterogeneity leads to increased interpersonal relations and discussion.

*Mass Media.* An examination of various channels of communication is a requisite in studies of local political participation. After all, one rarely uses only one mass medium, and effects of this medium should not be examined in isolation of other media. Data from a recent nationwide survey revealed that only 24% of all respondents relied regularly on only one medium (Owen, 1997). This figure undoubtedly would decline when one takes into consideration the prevalence of interpersonal communication in daily life. Unfortunately, investigations that incorporate both mass and interpersonal communication face problems of commensurability (Gitlin, 1978), and striving for complete equivalence of both forms of communication is a daunting task (Chaffee & Mutz, 1988).

The issue of causality between mass and interpersonal discussion is difficult to disentangle. Does interpersonal discussion drive use of the mass media? Research from the uses and gratifications literature suggests that this may indeed be the case. Scholars have found that individuals do turn to the media for, among other reasons, their "communicatory utility" (McDonald & Glynn, 1984; McLeod & Becker, 1974). That is, people turn to the media to have things to talk about with others, to get information to use when they disagree with others, and so forth. However, other research has shown that interpersonal discussion may lead to disengagement from the mass media (Lenart, 1994).

At the same time, other research has shown that media use precedes interpersonal discussion at the individual and aggregate levels. Individuals who glean information from the media tend to follow up on this information (Kosicki & McLeod, 1990). On a macro-social level, diffusion research indicates that people learn initially from the media, but make decisions after engaging in interpersonal discussion (Rogers, 1983).

Steinberger (1984) notes that participation may be a function of various resources, e.g., networks and information, including what is obtained from the mass media or through interpersonal discussion. The reinforcing role of interpersonal communication strengthens the total impact of the media on social action (Chaffee, 1982).

*Reflection*. As noted earlier, the process of deliberation occurs at both the social and individual levels. On a social level, deliberation involves the exchange of opinions and perspectives. On an individual level, people encounter new ideas and strive to make sense of them. In doing so, people will think about and reflect upon these ideas, engaging in a "dynamic process of reflection and revision" (Bohman, 1996, p. 59). Reflection at the individual level enhances social-level deliberation in that it enables individuals to gather information and formulate thoughtful opinions prior to group deliberation. While the term "deliberation" has been used interchangeably with "reflection" at the individual level, we reserve the former to describe a social level process.

Reflection is metacognitive in that it involves "the active monitoring and consequent regulation and orchestration" of cognitive processes to accomplish goals or solve problems (Flavell, 1976, p. 232). Reflection is the willful use of cognitive abilities in integrating and using new information for issues which are salient to us (Fiske & Taylor, 1984). The concept of reflection as used in this study encompasses these ideas, and may be defined best by Kosicki and McLeod's (1990) concept of reflective integration, or "pondering and thinking"

(p. 78) about issues. Thus, reflection is concerned not only with the way in which individuals dwell upon information, but also with how this information is integrated into existing knowledge structures and potentially modified to fit these structures (McLeod et al., 1997b).

## RESEARCH QUESTIONS

Specific hypotheses based on previous research could be outlined. However, since our main focus is the development of a provisional model of social networks and participation in deliberative forums, mediating variables and the examination of indirect pathways are most interesting to us. We therefore specify research questions, starting with relatively well-established relationships between communication variables and participation in a public forum (e.g., McLeod et al., 1996; Mcleod et al., 1997a), then proceed to incorporate social context variables in two more exploratory research questions.

*RQ1: What are the pathways linking local public affairs media use and interpersonal discussion of issues to participation in a public forum?*

*RQ2: What are the pathways linking characteristics of networks to interpersonal discussion of issues?*

*RQ3: What are the pathways linking network characteristics to participation in a deliberative forum?*

## METHODS

Data for this study came from telephone interviews with 416 respondents in Madison, WI, and its contiguous cities, townships, and villages. The fieldwork was conducted between October 16 and November 3, 1997. A probability sampling procedure combined with a variant of random-digit dialing was employed to account for unlisted telephone numbers. The response rate was 58 percent.

### Measures

The measures in our study can be grouped into three categories: (1) exogenous variables, which are not influenced by any other variables in our model; (2) antecedent endogenous variables, which serve as both independent and dependent variables in our model; and (3) the final dependent variable. Appendix 1 provides the exact wording for all variables.

**Exogenous variables.** Four variables were included as exogenous variables in our model. The measures of age ($\underline{M}$ = 43.53, S.D. = 17.57) and gender (56% females) are straightforward. Education was measured as years of formal schooling ($\underline{M}$ = 15.16, S.D. = 3.25). Household income was measured on a seven-point scale in $10,000 increments, with the mode *and* mean of responses falling between $30,000 and $40,000.

**Antecedent endogenous variables.** Five variables served as antecedent endogenous variables.

*Size of networks* was measured as the number of people with whom the respondent reportedly discussed political or community issues ($\underline{M}$ = 7.56, S.D. = 8.95).

*Heterogeneity of networks* was based on four characteristics of the respondents and their primary discussion networks: age, gender, social ideology, and political information. Respondents' perceptions of the characteristics of their main discussion partners were subtracted from their own reports of these characteristics. These four difference scores were standardized and combined into an additive index ($\alpha$ = .47).[1]

*Interpersonal discussion of politics and community issues* was an additive index measuring respondents' frequency of discussion about local issues, neighborhod issues, and issues concerning schools on ten-point scales ($\alpha$ = .72).

The variable *local public affairs media use* combines six measures of attention and exposure to local content, school issues, and editorials in newspapers and three measures of attention to the same content on television ($\alpha = .89$).[2]

*Reflection* was an additive index of four items measuring respondents' thinking about political issues in general, and the frequency with which they think about schools as an important issue in their community ($\alpha = .66$).[3]

**Final dependent variable.** *Participation in deliberative forums* was operationalized as respondents' willingness to participate in a citizen forum about an issue that is important to them, to speak out at that forum, and to express their opinion even if others at the meeting held different opinions.[4] The reliability of the additive index was $\alpha = .76$.

## Analytical methods

As noted earlier, we expect exogenous variables and antecedent endogenous variables to be related not only to participation in public forums as the dependent variable, but also among themselves.

We tried to overcome the limitations of other multivariate techniques with respect to testing interrelationships between variables by employing structural modeling techniques, in this case, using LISREL (Jöreskog, 1993). Given a set of variables, structural equation models postulate "a pattern of linear relationships among these variables" (MacCallum, 1995, p. 18) and test these relationships against the data collected. By treating endogenous variables as both independent and dependent variables, structural equation modeling allows for the estimation of direct and indirect effects. An indirect effect is the influence of an independent variable on a dependent variable through one or more intervening or mediating variables (Bollen, 1987a; Hoyle, 1995). A direct effect is a link between two variables that is not mediated or moderated through any third variables.

In analyzing the proposed relationships, we follow Jöreskog's (1993) model generating approach. This approach proceeds in two steps. In a first step, an initial model is specified, based not necessarily on specific hypotheses about single paths between variables, but "at least some tentative ideas of what a suitable model should be" (Jöreskog, 1993, p. 313). In a second step, based on this core model, paths can be freed or fixed based on the Lagrangian Multiplier (LM) test (Bollen, 1987b).[5] All parameters added based on the LM test should be meaningful and substantially interpretable (Jöreskog, 1993).

## RESULTS

Based on a comparison among a number of competing models, a final model emerged (see Figure 1) that fits the data very well. The $\chi^2$ (24, N = 416) is 19.45 which translates into an excellent BIC statistic of -125.29 (see Raftery, 1995). The Goodness-of-Fit index (GFI) and the Adjusted-Goodness-of-Fit index (AGFI) – accounting for multivariate nonnormality – display an equally good fit of .99 and .98, respectively. The model accounted for eight percent of the variance in interpersonal discussion, 6% in local public affairs media use, 30% in reflection, and 11% in participation in deliberative forums.[6]

[INSERT FIGURE 1 HERE]

### Effects of Demographic Variables

The direct impact of exogenous variables is limited to age, education, and income. Gender had no significant impact (see Table 1).

[INSERT TABLE 1 HERE]

Older respondents attended more to local news media ($\gamma = .16$). As a result, they are significantly more likely to reflect upon issues (standardized indirect effect of .05) and to participate in public forums where these issues are discussed (indirect effect of .01). Respondents with higher levels of education also are more likely to reflect upon issues directly ($\gamma = .10$), which makes them more likely to participate in deliberative forums (significant indirect effect of .01). Finally, people who reported higher levels of income were more likely to engage in interpersonal discussion about political and community issues ($\gamma = .15$). They are more likely to use local media (($\gamma = .06$), reflect upon issues (indirect effect of .06), and participate in and speak out at public forums (indirect effect of .04).

**Effects of Network Characteristics, Communication, and Reflection**

The effects of the antecedent endogenous variables -- network characteristics, interpersonal communication, local public affairs media use, and reflection -- can be broken down into two different pathways, originating from the two network variables (see Table 2).

[INSERT TABLE 2 HERE]

First, respondents with larger discussion networks engage in interpersonal issue discussion about politics and community issues more frequently ($\beta = .22$) and are also more likely to use local public affairs media ($\beta = .14$).[7] Interpersonal issue discussion is linked to local public affairs media use by a non-directional link (.37).[8] Interpersonal discussion, in turn, has a positive impact on reflection of issues ($\beta = .28$), and participation in deliberative forums ($\beta = .21$). Local media use is related to reflection ($\beta = .33$), and reflection influences participation in deliberative forums ($\beta = .13$). As a result, network size shows relatively strong and significant indirect effects on reflection (.13) and participation in public forums (.08).

Second, respondents with more heterogeneous networks are more likely to participate in deliberative forums (β = .11). This relationship not only works directly, but also is mediated by frequency of interpersonal discussion about political and community issues (β = .10) and reflection on important issues (β = .11). Both are, in turn, related to participation in a deliberative forum. The total effects of heterogeneous networks on participation in a public forum are .15 and significant.

## CONCLUSIONS

### Understanding Public Forums

What can we conclude about participation in a public forum? First, public forums such as those sponsored by civic journalism, appear to have antecedents rather different from those of traditional forms of local participation. More traditional forms of participation were found to be strongly influenced by demographics in our study (14.3% in Appendix Table 1), replicating much previous research (e.g., Verba et al., 1995; Nie, Junn, & Stehlik-Barry, 1996). In contrast, we found participation in public forums to be virtually independent of four demographic influences (1.5%, App. Table 1). This replicates previous research comparing traditional and non-traditional forms of participation (McLeod et al., 1996; McLeod et al., 1997a). The lack of demographic influences means that sponsors of public forums cannot count on attendance being stimulated by customary recruitment networks made up of older, more educated and affluent citizens (Rosenstone & Hansen, 1993; Verba et al., 1995). On the other hand, the lack of status influences may allow public forums to have a broader base of participants that meets the egalitarian aims of civic journalism.

Public forums do share other characteristics with traditional types of participation. Both are directly influenced by interpersonal discussion of local issues and by more reflective thinking about such matters (App. Table 1). They are influenced both by discussion networks, though more by the heterogeneity of the network for forums while network size is the key factor for traditional participation. For traditional activities, a larger number of ties in one's network increases the chances of being asked to participate. We seldom act alone. Participation in forums, however, involves more than just attending; it involves confrontation with conflicting points of view and potentially defending your own position. These are actions to which members of heterogeneous networks have been accustomed. Our supplementary analyses of the separate indicators of forum participation indicate that the same factors influence both potential attendance and speaking out at public forums (App. Table 2). Both heterogeneity and size of discussion networks and the frequency of issue discussion influence both attendance and speaking out. Our evidence suggests that citizens do anticipate the conflict and challenge to their own views that are inherent in forums. Despite the conflict, forums also seem to offer an egalitarian appeal lacking in traditional participation.

To the extent that participation in a deliberative forum is not unidimensional, our study has implications for Putnam's (1995) thesis that America's social capital is on the decline, and that Americans are beginning to bowl alone rather than with their bowling leagues. Putnam's argument is based on data showing that membership in a number of groups has declined over the past few decades. Yet others note that perhaps it is not quantity, but rather quality, of membership that matters (Schudson, 1996). In other words, is paying membership fees for three associations necessarily any better than playing an active role in a single association? Our analyses of forum attendants versus active participants suggests a similar qualitative difference in participation (see App. Table 2). Conclusions concerning the health of America's social capital may differ if the "strength" of membership in an association is considered. Similarly, studies of participation may need to reconceptualize participation along various dimensions.

Though we have suggested some distinctive features of public forums, future research should include more direct measures of how such forums are perceived. Research might also examine public reactions to variations in the formats of the various alternative strategies of civic journalism programs. Evidence from the present study was limited to responses to a hypothetical forum; nevertheless, the influences of network and communication variables do testify for the content validity of our forum participation measures. It would be very useful, however, to conduct future research as part of evaluating actual civic journalism experiments. Such research might examine not only the antecedents of participation as was done in the present study, but also the effects of the antecedents and the forum on the participants.

## Pathways to Forum Participation

What can we say about the pathways to public forum participation? We developed a well-fitting model that identified two pathways linking network characteristics to forum participation. One is a direct *behavioral* pathway from network heterogeneity to forum participation; membership in a diverse discussion network means encountering different points of view and dealing with them. This may provide experience and confidence that should motivate people to participate in forums and lessen inhibitions about doing so.

The second route is a more complex *reflectional* pathway. This emanates from network size. A greater number of discussion partners makes frequent discussion of issues and use of local public affairs media more likely. Issue discussion is linked to attentive local media use and also stimulates greater reflection about local issues. Local media use promotes reflection on local issues which, in turn, enhances participation in public forums.

The identification of two pathways may have consequences for designing programs to promote participation. Programs for enhancing local participation might develop different strategies reflecting the two routes. The behavioral pathway suggests providing direct experiences, in school curricula for example, that build confidence and skills in listening to diverse points of view or resolving conflict. Strategies using the reflectional pathway would be more cognitive in focusing on the benefits of information-seeking and analytical thinking and expression in solving problems in the public domain.

### Discussion Networks

We have identified two dimensions of local discussion networks that play distinctive roles in generating potential participation in public forums. The *size* of the network indirectly affects participation through its direct positive impact on the heterogeneity of the network and on the frequency of discussion of local issues. The latter finding replicates previous research (Leighley, 1990). Persons with larger networks are more likely to interact with a more diverse set of others and to have more frequent issue discussions.

Interaction in more *heterogeneous* networks was found to have a direct effect of stimulating local discussion, reflection on local issues, and participation in public forums. The influence of network diversity on discussion replicates much previous research (Blau, 1977; Blum, 1985; Krassa, 1990; MacKuen, 1990; McLeod et al., 1997c), but the influences on reflection and on participation are new. Presumably, such networks provide experiences that build the skills, motivation and confidence that generate the direct behavioral path to participation. Does this work mainly through increasing positive incentives or more from lessening inhibitions to participate? It is likely diverse networks also widen the person's perspectives and interests that work through the more indirect reflectional route.

Future research should investigate these presumptions about network heterogeneity with specific questions about the topics of conversation, perceptions of motivation, confidence, and group norms for reflective arguments. It also should use more reliable measures of heterogeneity by asking additional questions about group composition. Further attention should be directed to the question of why some people are located in homogenous rather than heterogeneous networks. Is this more a matter of personal choice or structural location? The present research did not replicate research indicating the that young, the better educated and the more affluent had more heterogeneous networks (Mcleod et al., 1997c; Straits, 1996). The question becomes, if demographics do not determine network heterogeneity, what personal or social factors do?

## Issue Discussion

Our model identified three strong direct effects of *issue discussion:* the more frequently local issues were discussed, the more likely the person was to attentively use local news, to reflect on local issues, and to anticipate participation in local forums. The assumption is that discussion generates a need to seek information from news media to use in future discussions, and that they provide experience and diverse points of view that lead to thinking about issues and to having sufficient arguments to be useful in forum discusisons. Again, these assumptions need to be substantiated with direct questions in future research.

It is important to note that our measures of interpersonal discussion of political issues and of discussion networks are more specific than those employed in previous research. Given the specificity of these measures, we must be cautious in generalizing our findings to all types of interpersonal communication or social networks.

### Local Public Affairs Media Use

Attentive use of local news media was found to strongly influence reflection about local issues. This generated an indirect effect on forum participation, but no direct effect was indicated. Subsequent analyses (not shown in tables) revealed that local news use also contributes substantially to knowlege of local issues ($\beta = .25$). Thus, attentive news use and the internal reflection it stimulates are likely to contribute to the *quality* of the deliberation in public forums. It is clear, however, that attentive news use is not sufficient by itself to produce attendance and participation in public forums.

The lack of direct connection may be surprising, given the prominence that the leading local newspaper and television news station have accorded the civic journalism "We The People" forums over the past several years.[9] Yet, we may have studied the community system "at rest." News media influences on forum participation might be greater if they were measured during the publicity phase leading up to a forum on a topic of importance to the citizen.

It appears that the major contribution the news media can make to public forums is through the stimulation of reflective thinking. We should not think of this linkage as inevitable or that all types of content contribute equally to this connection. It is likely that more contextualized thematic coverage of local issues is the key to reflection. This is an empirical question to be tested in future research.

## Reflection

The path shown between reflection and forum participation is a key finding. Those who tend to reflect upon local issues are more likely to attend and to speak up at public forums even after all eight of the other variables have been controlled. Why does a basically internal private process of reflection have a direct impact on external public behavior?

One possibility is that reflection helps to consolidate the fragmentary information learned from the news media. If so, then reflection should enhance local knowledge and such knowledge should effectively mediate the relationship between reflection and forum participation. The first requirement is sustained; reflection predicts local knowledge ($\beta$ =.13 in subsequent analyses not shown in tables) as does attentive local news use ($\beta$ =.21). The second requirement, that local knowledge mediates the reflection to participation relationship, does not hold. Adding local knowledge as a final control does not reduce the beta. This is because local knowledge fails to predict forum attendance. In contrast, local knowledge does predict to more traditional forms of participation ($\beta$ =.14) which are perhaps more frequently the subject of news articles. Alternatively, reflection may affect forum participation through other outcomes such as making connections to sociotropic benefits of forums, evaluating consequences, and invoking principles. These outcomes should be examined in future work in this area.

## Public Forums and Democratic Ideals

We have found evidence that in certain ways public forums are compatible with normative democratic standards. First, forums appear to have considerable appeal to our respondents; 60.3% felt they would attend a forum concerning the issue of most importance to them. Among those who said they would attend such a forum, the means on a ten-point scale were 5.24 for speaking out and 5.88 for stating their opinion if different from the majority. Second, the appeal of public forums is much broader than that of more traditional forms of participation. The strong influences of income, education and age that characterize participation in traditional activities were absent as effects on attending and speaking out as public forums. These findings suggest that forums meet the democratic standards of egalitarian appeal. Chronically under-represented voices may have a greater chance of being heard than is usually the case.

Our findings do not imply that public forums meet democratic ideals in all respects. Even if equality in attendance and intended speaking within the forum were to be achieved, there is no guarantee that all views will be accorded equal attention and fair represention in the policy decisions that might emerge from the deliberation. Previous research shows the dysfunctions of "group-think" in decision-making groups (Janis, 1972), and studies of mock jury deliberations indicate that the processes and outcomes of "democratic" groups tilt toward high status members and their views (Strodtbeck, James, & Hawkins, 1957). Indeed, critics of civic journalism argue in opposition to Dewey that mere "sociable" conversation is *not* the essence of democracy (Schudson, 1997).

Public forums pose potential problems for other democratic ideals. The fact that forums attract a broader base of participants satisfies the ideal of *equality*. Yet this very ideal may frustrate the ideal that deliberations should be maximally *informed*. To the extent that social status is related to knowledge, public forums are apt to have lower levels of civic knowledge than traditional types of participation. However, despite the egalitarian nature of forums, those who attend a given forum tend to be united in their interest in a particular issue. Participants are thus likely to possess practical knowledge useful to deliberation of a given issue regardless of their levels of formal civic knowledge. Perhaps of greater importance is the question of how to infuse information into the forum that is balanced and helpful to the deliberation process.

# ENDNOTES

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1 The relatively low reliability coefficient is consistent with previous research in this area. Knoke (1990b), for example, reports relatively high proportions of measurement error in variables like perceptions of party identification of discussion partners. He notes that respondents' reports of network characteristics are bound to be unreliable in surveys, and calls for more research "on the consequences of using unreliable measures in analyzing structural processes" (p. 55).

2 As only attention was measured for television, the television measures were weighted equally to the newspaper measures in the combined index.

3 The issue-independent and issue-dependent measures were weighted equally

4 Ideally, participation in public forums should be measured retrospectively, i.e., as real behavior. As findings by the Pew Center (1997) show, however, programs like the "We the People Program" in Madison, WI, often manage to recruit as few as one percent of the population for participation in forums they organize. As there is little empirical data on real participation on public journalism forums or similar meetings, we decided to measure participation in these forums in a hypothetical setting.

As the three scales used to measure participation in a public forum used different metrics, the items were standardized before the index was formed.

5 The Lagrangian Multiplier Test provides an estimate of the Chi-square increase if a specific path is freed. It is equivalent to the modification index proposed by Jöreskog and Sörbom (1993).

6 It is possible that the relatively small amount of variance accounted for in our criterion variable stems from the low reliabilities in some of the antecedent endogenous variables. We therefore constructed a latent-variable model controlling for measurement error in the variables for which reliability estimates were available. After error variances were entered into the model, we accounted for 11% of the variance in interpersonal discussion, 31% in media use, 55% in reflection, and 19% in participation in public forums.

7 The path from size of networks to heterogeneity of networks ($\beta$=.13) has to be interpreted as a structural link. A network's size has to be understood as a necessary condition for its heterogeneity.

8 Previous research has not conclusively answered the question about the *causal direction* of the link b between local public affairs media use and interpersonal issue discussion. This path could be specified with either variable serving as the independent variable or as a reciprocal, (non-recursive) relationship. As there is no compelling reason to choose one solution over the other, we decided to link the two variables with a non-directional causal link (e.g., Davis, 1985).

At the same time, a non-directional link addresses a problem that might arise from the fact that respondents nominated the issue most important to them and then answered to questions regarding the criterion variable for the issue they had nominated. Depending on how well-established the issue is on the local media agenda, interpersonal issue discussion might be the driving force behind media use, or vice versa.

9 The "We the People" project is a civic journalism project that aims to reconnect citizens with public life through town hall meetings, candidate forums, and citizen-based reporting.

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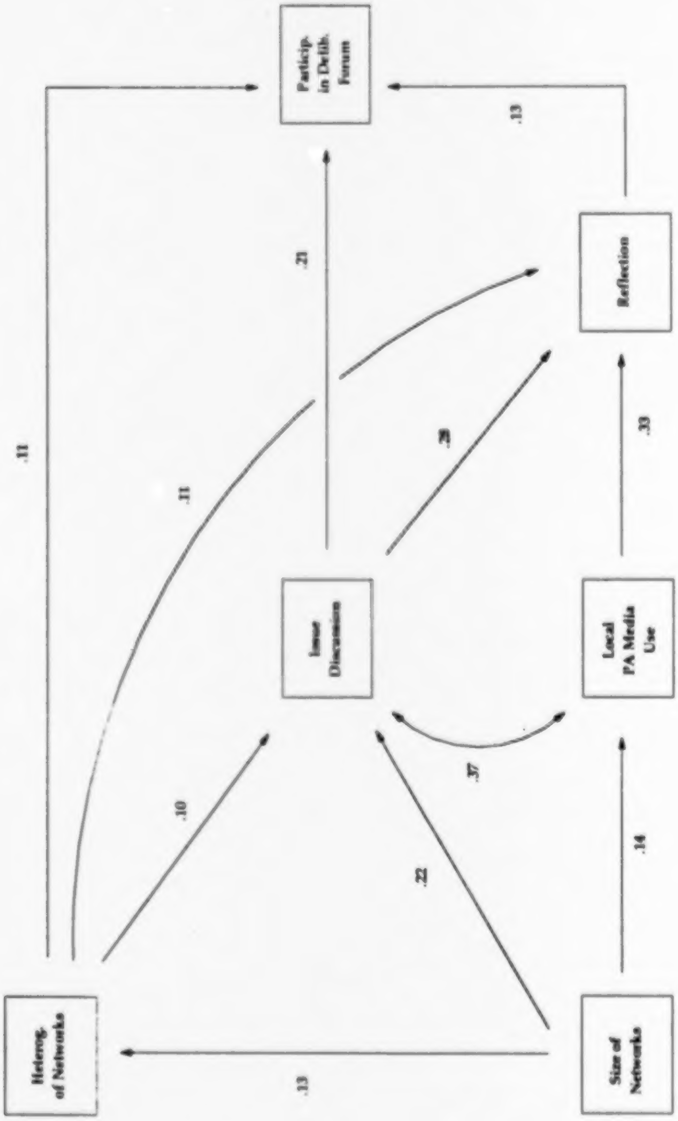
# FIGURE 1: STRUCTURAL MODEL, (EXOGENOUS VARIABLES CONTROLLED)


Particip. in Delib. Forum
Reflection
Issue Discussion
Local PA Media Use
Heterog. of Networks
Size of Networks
.11
.11
.21
.13
.28
.33
.10
.37
.22
.14
.13

## TABLE 1: IMPACT OF EXOGENOUS VARIABLES

| | Age | Education | Income |
|---|---|---|---|
| **Network Size** | -- | -- | -- |
| | -- | -- | -- |
| | -- | -- | -- |
| **Network Heterogeneity** | -- | -- | -- |
| | -- | -- | -- |
| | -- | -- | -- |
| **Issue Discussion** | -- | -- | .15* |
| | -- | -- | -- |
| | -- | -- | .15* |
| **Public Affairs Media Use** | .15* | -- | .12* |
| | -- | -- | -- |
| | .15* | -- | .12* |
| **Reflection** | -- | .10* | -- |
| | .05* | -- | .08* |
| | .05* | .10* | .08* |
| **Participation in Deliberative Forum** | -- | -- | -- |
| | .01* | .01 | .04* |
| | .01* | .01 | .04* |

Notes: (1) **Asterisks denote coefficients at least 1.96 times larger than their standard error.**

(2) **Coefficients on the first line of each cell are direct effects, coefficients on the second line are indirect effects, and coefficients on the third line are total effects.**

## TABLE 2: IMPACT OF ANTECEDENT ENDOGENOUS VARIABLES

| | Network Size (1) | Network Heterog. (2) | Issue Discuss. (3) | Public Affairs (4) | Reflection (5) | R² (%) |
|---|---|---|---|---|---|---|
| **Network Size (1)** | --<br>--<br>-- | --<br>--<br>-- | --<br>--<br>-- | --<br>--<br>-- | --<br>--<br>-- | -- |
| **Network Heterogeneity (2)** | .13*<br>--<br>.13* | --<br>--<br>-- | --<br>--<br>-- | --<br>--<br>-- | --<br>--<br>-- | 1.7 |
| **Issue Discussion (3)** | .22*<br>.01<br>.23* | .10*<br>--<br>.10* | --<br>--<br>-- | --<br>--<br>-- | --<br>--<br>-- | 8.6 |
| **Public Affairs Media Use (4)** | .14*<br>--<br>.14* | --<br>--<br>-- | --<br>--<br>-- | --<br>--<br>-- | --<br>--<br>-- | 6.1 |
| **Reflection (5)** | --<br>.13*<br>.13* | .11*<br>.03<br>.14* | .28*<br>--<br>.28* | .33*<br>--<br>.33* | --<br>--<br>-- | 30.1 |
| **Participation in Deliberative Forum (6)** | --<br>.08*<br>.08* | .11*<br>.04*<br>.15* | .21*<br>.04*<br>.25* | --<br>.04*<br>.04* | .13*<br>--<br>.13* | 10.9 |

Notes: (1) Asterisks denote coefficients at least 1.96 times larger than their standard error.

(2) Coefficients on the first line of each cell are direct effects, coefficients on the second line are indirect effects, and coefficients on the third line are total effects.

## APPENDIX 1: QUESTION WORDING

Age: What was your age on your last birthday?

Gender: [Ascertained by interviewer].

Education: What is the highest year of schooling you have completed?

Income: I would like an estimate of your total 1996 household income. Please estimate the combined income for all household members from all sources.

Heterogeneity Of Networks: For discussion partners:

> Is _____ male or female?
>
> How old is _____?
>
> The terms 'liberal' and 'conservative' might mean different things to different people, depending on the issue one is considering. Generally, would you say, _____ is very liberal, liberal, somewhat liberal, moderate, somewhat conservative, conservative, very conservative?
>
> How well, do you think, is _____ informed about political issues?

For Respondent:

> Age (see above)
>
> Gender (see above)
>
> Ideology (same scale as discussion partners)
>
> Political information was assessed using four closed-ended knowledge items referring to local politics and community affairs ($\alpha = .74$)

Size of Networks: How many people, outside your immediate family, do you usually talk to about issues and matters that are important to you?

| | |
|---|---|
| Issue Discussion: | How often do you have discussions with other people about<br>- local issues and politics,<br>- issues concerning your neighborhood,<br>- issues concerning schools. |
| Local Public Affairs Media Use: | Exposure and attention (for newspapers) and attention (for television) to the following content:<br>- News about politics, economy, and social issues in the Madison area,<br>- Editorials about local affairs,<br>- Madison area news about schools. |
| Reflection: | Please tell me how you feel about each of the following statement?<br>- After thinking or seeing a news story I think about how it relates to what I already know.<br>- Often, when I've learned something in the news, I'll recall it later and think about it.<br>- Often, if I come across something interesting in the news, I follow it up in greater detail later.<br>Apart from discussions with other people, how often do you think about issues concerning schools? |
| Participation in Deliberative Forum: | If you were called to a local forum about an important issue, where citizens discuss local or community problems, would you attend?<br>How likely would it be for you to speak up at the meeting?<br>How likely would it be for you to express an opinion that is different from those of others at the meeting? |

## APPENDIX TABLE 1:
## PREDICTING PARTICIPATION IN DELIBERATIVE FORUMS AND TRADITIONAL FORMS OF PARTICIPATION

| | **Participation in Deliberative Forums** | | **Traditional Forms of Participation** | |
|---|---|---|---|---|
| | **Before-entry β** | **Final β** | **Before-entry β** | **Final β** |
| Demographics (4) | | | | |
| Age | -.01 | -.00 | .13** | .14** |
| Gender (F) | -.05 | -.01 | -.03 | .00 |
| Education | .08 | .04 | .19** | .14** |
| Income | .09 | .04 | .27** | .17** |
| **$R^2$** | **1.5** | | **14.3**** | |
| Networks (2) | | | | |
| Size | .12* | .08 | .26** | .21** |
| Heterogeneity | .09 | .12* | .00 | .04 |
| **Incremental $R^2$** | **2.4*** | | **6.7**** | |
| Issue Discussion (1) | | | | |
| Issue Discussion | .27** | .22** | .27** | .19** |
| **Incremental $R^2$** | **6.5**** | | **6.3**** | |
| Media Use (1) | | | | |
| Public Affairs | .04 | -.03 | .06 | -.02 |
| **Incremental $R^2$** | **0.0** | | **0.3** | |
| Reflection (1) | | | | |
| Reflection | .16* | .16* | .22** | .22** |
| **Incremental $R^2$** | **1.8*** | | **3.4**** | |
| **Total $R^2$** | **12.4**** | | **31.0**** | |

Notes: (1) * $p \leq .05$ ** $p \leq .01$
(2) Incremental and total $R^2$s in percent.

## APPENDIX TABLE 2: PREDICTING ATTENDANCE VERSUS SPEAKING OUT AT PUBLIC FORUMS

| | **Attendance at Forum** | **Speaking Out at Forum** |
|---|---|---|
| Demographics (4) | | |
| Age | -.07 | .01 |
| Gender (F) | .03 | -.03 |
| Education | .04 | .01 |
| Income | .08 | .10# |
| **$R^2$** | **0.8** | **1.2** |
| Networks (2) | | |
| Size | .13# | .10* |
| Heterogeneity | .11# | .11* |
| **Incremental $R^2$** | **2.6*** | **1.9*** |
| Issue Discussion (1) | | |
| Issue Discussion | .31** | .22** |
| **Incremental $R^2$** | **8.0**** | **4.2**** |
| Media Use (1) | | |
| Public Affairs | .11 | .07 |
| **Incremental $R^2$** | **0.5** | **0.4** |
| Reflection (1) | | |
| Reflection | .12 | .10# |
| **Incremental $R^2$** | **0.9** | **0.7#** |
| **Total $R^2$** | **12.8**** | **8.4**** |

Notes:
(1) Coefficients for the logistic regression model are standardized coefficients (see Menard, 1995; Kaufman, 1996), coefficients in the ordinary least squares models are standardized betas.
(2) Incremental and total $R^2$s are reported in percent; for the logistic regression, the variance accounted for is expressed in Nagelkerke $R^2$ (Nagelkerke, 1991).
(3) # $p \leq .10$ * $p \leq .05$ ** $p \leq .01$

## APPENDIX TABLE 3:
## CORRELATION MATRIX ANALYZED

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Age (1)** | 1.00 | | | | | |
| **Gender (female) (2)** | .11* | 1.00 | | | | |
| **Education (3)** | -.06 | -.07 | 1.00 | | | |
| **Income (4)** | .11* | -.06 | .20** | 1.00 | | |
| **Network Size (5)** | -.01 | -.01 | .06 | .09 | 1.00 | |
| **Network Heterogeneity (6)** | -.04 | .01 | -.04 | -.07 | .13* | 1.00 |
| **Issue Discussion (7)** | .03 | .08 | .09 | .16** | .26** | .11* |
| **Loc. Public Affairs Media Use (8)** | .17** | .17** | -.02 | .14** | .15** | -.01 |
| **Reflection (9)** | .00 | .04 | .13* | .16** | .18** | .13** |
| **Participation in Forum (10)** | -.02 | -.03 | .07 | .10 | .13* | .15** |

| | (7) | (8) | (9) | (10) |
|---|---|---|---|---|
| **Issue Discussion (7)** | 1.00 | | | |
| **Loc. Public Affairs Media Use (8)** | .44** | 1.00 | | |
| **Reflection (9)** | .46** | .48** | 1.00 | |
| **Participation in Forum (10)** | .29** | .17** | .26** | 1.00 |

Note: * $p \leq .05$ ** $p \leq .01$